

Lovers of Learning



*Her Majesty Queen Margrethe II.
Patron of the Society
since Her Accession to the Throne 1972.
Photo by Rigmor Mydtskov 1988.*

OLAF PEDERSEN

Lovers of Learning

A History of
the Royal Danish Academy of
Sciences and Letters
1742-1992



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CONTENTS

Foreword by Erik Dal	7
Preface by the author	9
I The Rise of the Academies	11
II The Origins of the Society	21
III Consolidation and Expansion	38
IV In the Service of the King	57
V The Regular Publications	72
VI Measuring the Country	89
VII The Years of Crisis	105
VIII The Scientific Awakening	119
IX Words, Words, Words	133
X The Beginning of a New Era	145
XI Ørsted's Reign	158
XII The Society and the World of Nature	177
XIII The Society and the World of Man	192
XIV A Political Interval	207
XV The Carlsberg Era	221
XVI Into the new Century	233
XVII Openings towards the World	254
XVIII Research in an International Framework	268
XIX The Society in War and Peace	281
XX The Presidency of Niels Bohr	292
XXI Within Living Memory	305
Envoi	331
Protectors, Presidents and Officers	336
Literature	337
Index of Names	339

Within the international community of learned societies to which the Royal Danish Academy of Sciences and Letters belongs, its age is neither modest nor awe-inspiring. However, the fashion and, as it soon turned out, the value of establishing such interdisciplinary centres outside the Universities and the Churches had spread from Italy's Renaissance to the northern countries, and the mid-eighteenth century saw several new academies, for instance in St. Petersburg, Stockholm, Copenhagen and Trondheim.

The history of our Academy is by no means hidden in the archives. The first century was described by the immensely productive historian and civil servant Christian Molbech in 1843 (see p. 173); and in our time Asger Lomholt, employed in the Academy secretariat 1925-1975, compiled his abundantly documented *Samlinger til Selskabets Historie I-V* (see p. 258). Nevertheless, a full description of our history in a major language has been a real desideratum.

Therefore, as the 250th anniversary approached, the Presidium found it proper to commission not only another Danish book covering the most recent fifty years, by Mogens Blegvad, Professor emeritus of Philosophy at the University of Copenhagen, but also a complete history of the Academy, to be written in English. The obvious author was Professor Olaf Pedersen, who for many years had taught the history of the exact sciences at the University of Aarhus, where he has been able to create an Institute and recently also a Museum for this discipline. With a broad international experience and a large scholarly output not least as a medievalist he was requested to present the local and internal history of this institution in a broader framework of Danish and international scientific and scholarly development and general history.

The Presidium was highly satisfied when Professor Olaf Pedersen consented to write a book along these lines, and, while sharing the gratitude for assistance received which he expresses in his preface, the most obvious debt of gratitude is that of the Academy towards the author of this broadminded, vivid and instructive account.

Among many generous donations towards the books, symposia and festivities during this year we owe a sincere word of thanks to the board of Lillian og Dan Finks Fond for a considerable grant earmarked for the production of the book with regard for the wide perspectives the author was requested to open.

It is our hope that the book will find its readers in the many countries with which our institution and its members have scholarly, scientific and personal contacts. The exclusive use of the Danish language, not only in the books by Molbech and Lomholt, but with few exceptions in all our publications up to the year 1900, has obscured not only the international history of the Academy, but also the recognition of some of the published scholarly and scientific results. This, of course, cannot be remedied; but perhaps Olaf Pedersen's book about periods, personalities and problems during 250 years, some almost forgotten, some unforgettable, may serve as a late confirmation of a dictum by our great poet Thomas Kingo: In the preface to a collection of hymns from 1673 he wrote that »the spirit of the Danes is not so poor and faint-hearted that it cannot ascend as high towards the sky as that of others, even when not carried on alien and outlandish wings«.

Erik Dal

Preface

A few years ago I was entrusted with the task of writing a brief history of an association formed 250 years ago by a small group of Copenhagen scholars who called themselves Lovers of Learning and Science. It has since adopted the name of The Royal Danish Academy of Sciences and Letters, although its members always refer to it as "The Society" purely and simply, as a faint recollection of the days when it was the only one of its kind in this country, – a practice which I have unblushingly decided to follow in spite of the official, but rarely used title.

Already at an early stage of the work I realised that it was a difficult undertaking, not least for a mere historian of science who was more familiar with Antiquity and the Middle Ages than with the Enlightenment or the Romantic Movement. In consequence I am deeply grateful to the many friends and colleagues who have come to my assistance, including numerous members of the Society. To two among them I feel especially indebted. My sincere thanks are due to the President of the Society, Dr. Erik Dal, who has been kind enough to follow the work from beginning to end, reading and making useful comments on my manuscript, helping me to choose the illustrations, and even finding time for designing the book as it is, with an interesting new typeface which is here used for the first time in the publications of the Society. Similarly I express my profound gratitude to my Aarhus colleague Professor, dr.phil. Knud Sørensen, who has patiently spent much of his time eradicating the linguistic mistakes in my original text and also been kind enough to read the proofs; what errors remain are certainly my own. Finally I wish to thank the Staff of the Society for their unfailing interest, and in particular Ms Else Løvdal Nielsen, who has compiled the Index and also drawn my attention to several inconsistencies in the original draft of the text.

It is superfluous to add that my work would have been unthinkable without the achievements of two great figures of the past, Christian Molbech and Asger Lomholt, to whose memory I venture to dedicate the following pages.

Risskov, in September 1992

Olaf Pedersen



*Christian VI (1699-1746). King of Denmark and Norway 1730-1746.
Founder and first Protector of the Society. – Painting about 1730 by J.S.Wahl
(in the possession of the Society).*

CHAPTER I

The Rise of the Academies

For several centuries a growing number of learned societies have played a conspicuous role in the intellectual life of Europe and in those countries beyond the ocean where European influence has helped to shape other cultures. These associations of scholars or amateurs did not emerge out of the blue, but originated in a particular situation in the later Middle Ages when the shortcomings of the Medieval universities became more and more apparent. In the 12th and 13th centuries these venerable institutions had come into being in a remarkable attempt to reorganise higher education. On the one hand they were stimulated by an intellectual revival which had made most of the extant sources of ancient Greek science and learning available in Latin translation. On the other hand the university movement was promoted by the increasing need for educated personnel in a society in which social and economic relationships were rapidly becoming more complex than in previous ages. This was reflected in the very structure of the universities. The faculty of arts gave a basic education to grammar school boys, many of whom would become teachers themselves and contribute to the increasing literacy of the population at large. Others would go on to one of the higher faculties to prepare themselves for other professions. The faculty of medicine produced medical practitioners; the faculty of laws created future administrators with expert knowledge of canon or civil law, and the faculty of theology provided teachers for the episcopal schools, where the ordinary parish priests were educated.

At the beginning this system was an unmitigated success. The first universities and their immediate successors were able to cater for the recognized needs of society at the same time as they would attract all the most brilliant minds of their day. But as time went on, this situation began to change. Watching over their statutes and privileges the universities preserved their four original faculties and much of their traditional curriculum even if society made new demands. Moreover, from the very beginning they had, as a matter of course, ignored a number of subject matters of no mean importance. This was manifest already in the basic faculty of arts where the "humanistic" disciplines of the trivium, –

grammar, rhetoric, and dialectics (i.e. philosophy) – no doubt made the students acquainted with a number of classical writers whereas contemporary literature, poetry and history were neglected. Similarly, the exclusive use of Latin made the vernacular languages homeless in the universities despite their growing literary importance in the outside world.

Other difficulties appeared in the higher faculties. The medical schools taught only medicine and pharmacology, leaving surgery to the care of practitioners of the most different kinds, from men who had actually been apprenticed to qualified surgeons to simple barbers or mere charlatans. In the faculty of law the situation was hardly better. Here students were educated in canon law which was accepted everywhere in the Western Church, or in Roman Law which was often of little use and even feared as a dangerous intrusion in the many countries where the judicial system was based on local or common law. As for theology, the last two centuries before the Reformation resounded with eloquent complaints about the poor qualifications of the parish priests, most of whom never aspired to a university degree. Finally, no Medieval university seems to have dreamed of erecting a higher faculty of science, even if there was an increasing demand for experts in fields like navigation, mining, and hydraulics, not to speak of the martial arts of fortification and gunnery which emerged as special branches of applied mathematics.

This explains why from the 16th century onward the universities were supplemented by an increasing number of specialist schools, catering for a variety of technical disciplines and usually enjoying much government support as indispensable for the material development of society. Within the universities only medicine was able to resist this fragmentation of higher education by opening the doors of the faculties for surgeons, collaborating with hospitals, and investing much capital in anatomical theatres and museums. The result was that the old institutions survived as the natural centres of medical research. A side effect was that for instance botany emerged out of the old teaching of *materia medica* as a university subject in its own right.

It proved more difficult to reform the faculty of arts. The attempts of the Medieval Church to introduce some teaching of Greek, Hebrew and Arabic into a few universities were of little avail, and it was not until 1517 that the University of Louvain erected a *Collegium Trilingue* (for Greek, Latin, and Hebrew) under pressure from Humanist scholars with their passion for everything Greek. Other universities followed suit, and at the same time the Reformation made Greek and Hebrew a part of the staple diet of all Protestant schools. A testimony to these tensions be-

tween the old and the new was the erection in 1530 of the *Collège Royale* in Paris (now called *Collège de France*) as a humanistic stronghold vis-à-vis the old and less amenable *Collège de Sorbonne*. Steps in the same direction were taken in England, where the new learning was implanted into the old universities by the Royal appointment of Regius Professors in Hebrew, Greek, Divinity, Law, and Medicine in both Cambridge (1540) and Oxford (1546). But while the universities thus gradually succeeded in accommodating both the new medicine and the humanistic movement, they failed spectacularly in other fields.

First and foremost the increasing rigidity of the scientific curriculum made it more and more difficult for natural philosophers to feel at home within the traditional pale of the *quadrivium*. Many of the scientific pioneers abandoned the university in order to work independently on the basis of ecclesiastical preferment or princely patronage. For example, in 1471 Johannes Regiomontanus created his private institution for the reform of astronomy at Nuremberg, which was not a university town. His efforts were continued with more success by Nicolaus Copernicus (1473-1543), who lived and worked as a simple canon in a remote corner of Poland, earning his living as administrator of the huge diocese of Ermland. Later Tycho Brahe (1546-1601) erected a totally new type of research institution on the island of Hven with the lavish support of the Danish king. Johannes Kepler (1571-1630) was directly employed by the Emperor, and after twenty years of teaching, Galileo Galilei (1564-1642) left his chair at Padova (1610) in order to enter the service of the illustrious House of the Medicis in Florence. In this exodus of the scientists from the old centres of learning, astronomy formed no exception. Similar stories can be told of other disciplines as names like Descartes, Bacon or Pascal show. The inevitable result was a dilution of the scientific milieu within the universities which thus became even less attractive to progressive scientists.

But even long before the scientists began to seek new pastures, another movement was afoot among writers outside the universities, which consistently refused to take heed of the vernacular languages in spite of the growing popular appeal and literary success of both poetic and historical works written in Italian, French, English, and many European dialects. This situation formed the background of the first known attempt to meet a specific cultural challenge by the creation of a free and independent society of persons devoted to the common purpose of defending and developing an important cultural activity which the prevailing system of education had left out in the cold. This happened in 1323,

when a so-called *Consistori de la gaya sciensa* was formed at Toulouse with the approbation of the French king. Its purpose was "to preserve the Roman [i.e. Provençal] language in its original purity, and to establish a literary and poetic code which might be usefully consulted by all the devotees of the beautiful Langue d'Oc". The society met in the orchard of the famous Seven Troubadours of Toulouse. The purpose of the association was furthered by the awarding of an annual prize for the best poem in Provençal, and by the composition of a comprehensive work on Provençal grammar, rhetoric, and poetics. Under various names the society has survived until the present day, when it is known as the *Académie des Jeux Floraux*.

The Provençal society at Toulouse was the harbinger of the many private circles of scholars that emerged in the following centuries. At first they had an unmistakably humanistic bent. Famous was the *Accademia Fiorentina*, which met at the court of Lorenzo de' Medici (1449-1492) to discuss neo-Platonic and Hermetic philosophy. Less famous, but more broadly based, was the *Collegium poetarum et mathematicorum*, founded 1497 in Vienna by the German "Arch-Humanist" Conrad Celtis (1459-1508). Purely philological was the Florentine *Accademia della Crusca* from 1582, which realised its purpose of promoting the Tuscan language by the publication of a large *Vocabolario* (Venice, 1612); it became instrumental in establishing the dialect of Dante, Petrarch, Boccaccio, Machiavelli, and Galileo as the prototype of modern Italian. More scientifically minded was the *Accademia secretorum naturae*, founded around 1560 in Naples by the widely travelled physician Giambattista della Porta (d. 1615), who collected information all over Europe from both scholars and craftsmen who "knew anything that was curious". Members were admitted to his circle on the strict condition that they had made a new discovery or observation of a phenomenon of nature. On a higher scientific level was the Roman *Accademia dei Lincei*, founded in 1603 by the young Prince Federigo Cesi (1585-1630) who was an able naturalist and the first to study insects under the microscope. Its purpose was not only scientific research but also the publication of scientific works, among which were some of Galileo's major writings, and an important *Historia* of the plants and minerals of Mexico. This new sort of "academic" publishing gave the efforts of the "Lincei" a world-wide importance and a prominent role in that re-orientation of science which marked the 17th century from beginning to end.

The academy movement became increasingly successful. During the 17th and 18th centuries scores of towns and cities in all the major

countries of Europe provided themselves with one or more learned societies, the majority of which had only a limited importance as discussion clubs for amateur naturalists or local historians, among whom a few were now and then fortunate enough to make a conspicuous contribution to knowledge in general. However, some of these societies rose to real eminence, attracting illustrious scholars from far and wide and challenging the universities as the true well-springs of advanced research. Moreover, a few academies gained an international status by publishing academic journals with readers in many countries. This created an invisible network of scholars, who collaborated and competed in a mutual spirit of respect and tolerance, and without regard to the political divisions and religious fragmentation of post-Reformation Europe. In this way the movement gained a political dimension which would concern the authorities of the state, and at the same time the concentration of scholarly and scientific competence within the academies became apparent to governments that were increasingly dependent on technical expertise in many different fields. After the middle of the 17th century the interplay of all these factors produced a small number of prominent academies as national institutions with a recognized role in society; but the significantly different histories of the London, Paris, and Berlin societies revealed that this could be achieved in more ways than one.

In England the troubled years from the outbreak of the Civil War in 1642 to the restoration of the monarchy in 1660 were marked by much intolerance and repression within the universities, and soon scholars began to associate outside the walls of the established institutions. Already around 1645 a group of natural philosophers began weekly meetings in London, at first at a tavern and later at Gresham College, in order to perform experiments and discuss scientific matters. A few years later a similar group emerged in Oxford. Together they formed an "invisible college", among whose members were several scientists of the first water, such as John Wallis, Robert Boyle, and Christopher Wren. After the Restoration they united in the *Philosophical Society*, which was formally incorporated in 1662 as *The Royal Society of London for the Improving of Natural Knowledge*.

The new society emerged in the middle of the great debate that raged in 17th-century England on the cultural status of science and learning. Some of its founding fathers were influenced by the inductive philosophy of science developed by Francis Bacon, and also by his ideas on institutionalised research as the basis of human society, as popularised in the description of "Solomon's House" in the utopian *New Atlantis* (1627).

Others were imbued with a Calvinistic ethos regarding scientific research as a special type of the “good works” that man was religiously bound to perform. In a still wider perspective the first historian of the society, Thomas Spratt, even thought that it would achieve for science what the Reformation had achieved in religion: As the Reformation had eliminated the corruption of Holy Scripture, so the Royal Society was designed to do away with the previous corruption of the Book of Nature. However, from its very beginning the new society was wise enough to keep aloof from all sectarian attitudes; in the words of John Wallis, “we barred all Discourses of Divinity, of State-Affairs, and of News other than what concern’d our business of Philosophy.” In fact, the society welcomed as fellows both Royalists and Parliamentarians, and Anglicans, or Catholics as well as Puritans or Calvinists, in the well-founded belief that their common scientific attitude would overcome political and religious differences. Members were elected by secret ballot on the sole criterion of scientific excellence, with the only exception of the science professors of Oxford and Cambridge, who were entitled to join the society without scrutiny; this was also the case with the higher ranks of the nobility, who for more than a century outnumbered the scientific fellows in the ratio of two to one. The fellows were obliged to pay a regular fee which allowed the society to cover its expenses for experimental equipment and the salary of its amanuensis; this made it independent of both public grants and private patronage, establishing it as a free body with complete control over its own affairs and over the extent to which it would serve the interests of the powers of the state. Thus the Royal Society appeared as a model for many similar associations. When in 1666 it began the publication of its *Philosophical Transactions* – a journal full of original papers, contributions from foreign scientists, and reviews of books – its fame and influence assumed European proportions, promoted by the huge correspondence of its first secretary Henry Oldenburg.

In France the cultural context was very different, and from the very beginning the state tried to get control of the private initiatives of scholars. Already in 1635 Cardinal Richelieu (as prime minister) had transformed a private group of scholars into the *Académie Française*, charging them in a traditional way with the compilation of an official dictionary of the French language, the first edition of which appeared in 1694. This was followed in 1648 by an *Académie de sculpture et de peinture* created by Mazarin, and in 1663 by the *Académie d’inscriptions et belles-lettres*, formed by Colbert as a governmental instrument for recording

glorious events in French history on official monuments and medals. With regard to science the "invisible college" in England had its counterpart in a circle of scientists animated by the Franciscan Marin Mersenne (d. 1648) and later by the royal librarian Melchisédech Thévenot. But also here it was the state that took charge of the affairs when in 1666 Colbert established the *Académie Royale des Sciences* as another government body entrusted with such official tasks as the erection of the Paris Observatory and hydraulic constructions at Versailles.

At the beginning the *Académie des Sciences* was able to attract members from several countries, among whom there were also Protestants like Huygens, Roemer, and Leibniz. But the revocation in 1685 of the Edict of Nantes put an end to religious toleration in France. Many of the foreign members left the country, and after the death of Colbert in 1683 the academy languished until 1699, when it was reconstructed along lines that definitely revealed its essential character of being a state institution with a highly developed and complicated bureaucratic machinery. Firstly, the members were divided into four different ranks. At the top of the hierarchy were the ten *honoraires*, who all had to be eminent scientists. At a lower level were twenty *pensionnaires*, all of them French and obliged to reside in Paris. Further down were another twenty *associés*, eight of whom might be foreigners. At the bottom were twenty *élèves*, each of whom was apprenticed to one of the *pensionnaires*. Secondly, the members were divided according to scientific criteria, with a fixed number of positions within each rank for the disciplines of geometry, astronomy, mechanics, anatomy, chemistry, and botany. Each year the king appointed a president from the rank of the *honoraires*; other members were also chosen by the majesty from among a number of candidates nominated by the academy. The daily work was organised according to a fixed schedule. There were two meetings each week, except in the fixed periods of vacation, besides two special meetings a year which were open to the public. The research of each member was controlled and his publications censored by his colleagues. His papers would appear in the official *Mémoires* of the academy and be summarised in the annual *Histoire* in which its general activity was recorded. A particular feature of the French system was that all members were paid a salary according to their rank, with gratuities thrown in from time to time. In return they were obliged not only to pursue their scientific work, but also to serve on government committees, to keep an eye on publications of interest appearing abroad, and at the King's command to "examine all machines for which a royal privilege (i.e. patent) was sought, and to declare whether

they are new and useful", – a clause which enabled the academy to control the technological development of the country.

Thus two radically different models for a national academy had emerged. In London the *Royal Society* grew out of a previously collaborating circle of scientists as a free association, loosely organised without statutory sub-divisions into classes, responsible for its own economy, and freely offering its good services when its expertise was invoked by the government. In Paris the *Académie des sciences* had a similar prehistory, but it was created by a great statesman, becoming to all intents and purposes a state department of research and development, with salaried members, a strictly defined bureaucratic organisation, and little scope for independent activity. The very existence of such different concepts gave rise to problems which the founders of later societies had to consider in cases where the growing insufficiencies of the universities called for a new stimulus for research. Should one ask the government to organise the scientific potential of the country in the French manner? or await an initiative taken by the scientific community itself as in England? And how comprehensive should a national academy be? should it be a purely scientific institution, excluding the humanistic disciplines with their dangerous political and religious connotations? or would it be possible to unite the whole learned world in a single organisation? and how would this influence the efficiency and direction of its work?

Nowhere were such questions more obvious than in Germany, a country divided into numerous states, principalities and free cities, torn between two different religious denominations, and united only by a common language. Here there were local associations of scholars in several towns at the beginning of the 17th century, some of which did not survive the troubles of the Thirty Years' War. A somewhat more comprehensive association grew out of the Schweinfurt Academy which was founded in 1652 on a private basis, but reorganised in 1687 as the *Academia Leopoldina* under the auspices of the Emperor. It was active in many places, but had no fixed address, moving its headquarters to the town where the new-elected president resided. Soon after Germany got its first scientific journal of importance in the form of the *Acta Eruditorum*, which was founded in 1682 by a circle of scholars in Leipzig, where there was no academy but a lively university milieu. However, the idea of an all-German academy seemed to be ruled out by the political and cultural fragmentation of the country. Nevertheless it was seriously considered already in 1669/1670 in a Memorandum on the Erection of an Academy or Society in Germany by the philosopher G.W. Leibniz

(1646-1716); but he shelved it again in favour of his many efforts to end the religious strife in the country by means of a union between the churches.

In 1694 the project was again revived in a strange and unexpected way by the Jena mathematician E. Weigel (1625-1699) who was preoccupied with the Gregorian reform of the calendar (1582), which had not yet been introduced in the Protestant parts of Germany. His idea was to establish an all-German *Collegium Artis Consultorum* of twenty members to implement the reform. This body was then to be given an exclusive monopoly to publish the new calendars everywhere in the country. The result would be a huge annual income which would enable the *Collegium* to develop into a proper academy for all the arts and sciences. Weigel presented this plan to his former student Leibniz, who gave it his wholehearted support and approached various German princes who might agree to the project. He met with a positive response in Brandenburg, where he had long-standing and close relations with the court of the Great Elector Frederick Wilhelm (1640-1688) and his successor Frederick I, who in 1699 resolved to reform the calendar in agreement with a resolution adopted at a meeting of the Lutheran states at Regensburg. Persuaded by Leibniz he also decided to provide his capital city of Berlin with both an observatory and an *Académie des sciences*.

The latter institution was formally created in July 1700 with Leibniz as its first president. It was largely modelled on the *Académie des Sciences* of Paris, with a similar hierarchical structure, but with statutes which more explicitly made it possible to elect foreign members and to safeguard the religious tolerance which was so dear to Leibniz. A novel feature was the addition of a philologico-historical class of members to the classes of mathematics and natural science. But while the reform of the calendar was at long last introduced in Germany as a whole, the great project of an all-German academy came to nothing. However, when in 1701 the Electorate of Brandenburg was transformed into the new kingdom of Prussia, the Berlin society acquired a new status as the national academy of an independent state. This did not mean that it prospered. King Frederick I had no great love of intellectuals, and after the death of Leibniz (1716) the activity of his foundation more or less ceased until it was revived by Frederick the Great in 1745 with the eminent French mathematician Maupertuis (1698-1759) as a very able president. At this time the academy movement had already hit Prussia's neighbouring countries. The academy of St. Petersburg was created out of the blue by King Peter the Great in 1724. In 1739 Sweden followed

suit, and three years later a small group of scholars in Copenhagen founded the very modest association which in the course of time developed into The Royal Danish Academy of Science and Letters. How this happened is the subject matter of the following chapter.

CHAPTER II

The Origins of the Society

At the beginning of the 18th century a very large territory was united under the Danish Crown. It extended for more than 2000 miles from Cape North on the Arctic Sea to the city of Altona on the confines of Hamburg, comprising the twin kingdoms of Denmark and Norway, together with the Danish-speaking duchy of Schleswig and the German duchy of Holstein in the South, and in the West the distant possessions of Greenland, Iceland, and the Faeroe Isles. The total population of the realm was perhaps a little more than two million, of whom about 800,000 lived in Norway and a similar number in Denmark, where the capital of Copenhagen was the most important city in Northern Europe with about 70,000 inhabitants. Throughout the century these figures showed a remarkable stability, and a significant increase of the population did not begin until the following century.

Traditionally the whole realm had formed an elective kingdom in which a coronation charter imposed by the nobility defined the prerogatives of the king and his duties towards the three estates of society. But when in 1660 the last parliament for almost 200 years met in Copenhagen, an alliance between the king and the citizens succeeded in annihilating the power of the old noble families; the realm was transformed into an absolute monarchy with a hereditary king who exercised all power in both church and state, being responsible to God only for the conduct of his governance. His coronation charter was repealed and the old administration replaced by a new system of purely consultative bodies organised on a collegiate basis. They were the Supreme Court (with the King himself as president), the Treasury, the Admiralty, the War College, and last but not least the Chancery or "Cancelli" where all other business (including foreign affairs) was conducted. From 1670 a small Privy Council composed mainly of the chief officers of the "colleges" enabled the king to supervise all the proceedings of his government.

The educational system was based on a network of schools in the cathedral towns, from which students were sent up to the university of Copenhagen. This was the only school of higher education of the realm until 1686, when Duke Christian Albrecht of Gottorp founded a uni-

versity in Kiel to cater for the German-speaking part of the population of the South. Founded in 1479 Copenhagen University almost perished in the Reformation, to be re-established in 1537 as a Lutheran institution designed mainly for the education of the parish clergy. Being without much distinction for the next hundred years it underwent a remarkable revival around the middle of the 17th century. It was provided with an astronomical observatory on the Round Tower, an anatomical theatre, an anatomical museum, and a considerable library which, together with the Royal Library and several great private collections, made the capital very well provided with books.

This rejuvenated milieu produced a number of scholars and scientists of the first rank. The great anatomist Thomas Bartholin (1616-1680) discovered the lymphatic vessels while his brother Erasmus (1625-1698) was the first to describe the double refraction of light (1669). They belonged to an academic family with numerous ramifications which came to exercise a dominant influence on all the intellectual life of the country for almost a whole century, partly because of the undisputed eminence of some of its members, but partly also because of the adroit manipulations by which its less gifted representatives too were placed in university positions, sometimes to the exclusion of much better minds. A famous case was the exclusion in 1674 of the anatomical genius Niels Stensen (Nicolaus Stenonis 1638-1686) in favour of a 19 year-old son of Thomas Bartholin, Caspar, who had to be sent abroad immediately for three years in order to qualify himself for this important position. Without contributing anything of real interest to either subject he taught both physics and anatomy until 1732, when at long last he retired in connection with the reorganisation of the university. But his influence was even more farreaching since his very elementary and vaguely Cartesian text book of physics from 1680 was in constant use until 1770 with the result that the great restoration of physics inaugurated by Isaac Newton and later pursued in most European countries went unnoticed in Denmark.

As long as the family reunions of the Bartholin clan were the natural fora for scholarly conversation, there seems to have been neither the need nor the possibility of forming an academic society outside the university establishment. At least it is a significant fact that the first step in this direction was taken by other circles. In a way the very first beginning was made by Hector Gottfried Masius (1653-1709), a Mecklenburger who had received his complete education in Germany, visited Oxford, and spent five years in Paris before in 1686 he was called to Copenhagen as both professor of theology and personal chaplain to the

king. His house became the meeting place of a group of bright young men several of whom later made a name for themselves in the intellectual life of the country. Among them was Søren Lintrup (ca. 1669-1731), a somewhat supercilious young scholar with a sharp eye for the shortcomings of the university. His carefree comments on a number of the professors did not go unnoticed and even earned him a spell in the university prison. Being soon pardoned, he made a brilliant career at the cathedral school of Bergen in Norway, from where in 1702 he returned to Copenhagen. Here he was two years later appointed Provost of the "Regensen", the most important student college in the university, where in 1705 he founded the *Societas litteraria indagantium*, or the Society of investigators of literary matters, as the first independent academic union in the country.

We have no complete list of the members of the new society, but its manuscript records contain at least a dozen names of young scholars of about the same age, some of whom were destined to play a considerable role in the future. Among them was Peder Horrebow (1679-1764) who was the personal assistant of the famous astronomer Ole Roemer (in Danish Rømer, 1644-1710) and in 1714 acceded to the chair of astronomy which he occupied for no less than fifty years. Another was the philologist Hans Gram (1685-1748) whose central position in Danish scholarship will appear from the following chapters, while Lintrup's student Johan Daniel Ramus (1683-1762) had to leave the country after his conversion, ending his life as librarian to the Archbishop of Cologne. The minutes of one of the last meetings (1707 March 3) show the presence of nine members assembled to discuss the *Problema de methodo probandi existentiam Dei ex idea* (i.e. the ontological proof of the existence of God) with the concomitant question "Whether it will convince an atheist?" This was answered in the negative by Gram and five other members, whereas Horrebow voted with the minority which believed in the efficacy of Anselm's old argument. However, metaphysics was not the principal interest of the members, who were more concerned with antiquarian and historical matters, publishing their results in the Lubeck periodical *Nova litteraria maris Balthici*. An original piece of research of some interest was an unpublished survey from 1706 of all the printed publications of the professors of the university during the decade from 1694 to 1704. Contrary to what the dominant role of theology might suggest, only 114 publications out of a total of 1061 items had emerged from the theological faculty, whereas the medical faculty had produced 231, the philosophical faculty 307, and the faculty of law no less than

409 numbers. No doubt this survey was a testimony that the society had adopted the critical attitude of its founder towards the domestic scene, finding it appropriate to keep a vigilant eye on the industry of the professors of the university.

The activity of the *Societas indagantium* petered out after 1707, when its founder became professor of rhetoric as the first step on a rather stereotyped academic career which passed via a chair of theology (1716) to the bishopric of Viborg (1720). Looking back upon this first scholarly academy of the country, it is not easy to ascertain its importance. On the one hand its members were young and without responsible positions in society; their juvenile publications were only slight contributions to learning, and they never started a periodical of their own. On the other hand the lively discussions of the society gave a practical demonstration that it was useful to meet together on an interdisciplinary basis and with windows open to the greater world through the many foreign books that were presented and discussed at the meetings. At least some of the members would never forget the stimuli they received in this way. Of some importance were also the personal contacts with foreign scholars. Of special interest was the correspondence (from 1706 onwards) between Lintrup and Eric Benzelius the Younger (1675-1743) who was university librarian at Uppsala in Sweden. Here a *Collegium antiquitatis* had resided since 1668, and in 1710 Benzelius created a new *Societas litteraria Upsalensis* which had much in common with its predecessor and namesake in Copenhagen. In 1725-1726 he also promoted a *Societas scientiarum*, which was united shortly afterwards with the literary society to form the *Societas litteraria et scientiarum*. It was followed by the purely scientific *Kungliga Svenska Vetenskapsakademien* (The Royal Swedish Academy of Science) which was formally created in 1739 at Stockholm as the first national academy in the Scandinavian countries.

Meanwhile events in Denmark had followed a less unbroken course. Here the first third of the 18th century was a period of great calamities for the country. The extremely hard winter of 1709 and the ensuing failure of the crops broke the health of the population to the extent that the great plague of 1711 destroyed one third of the inhabitants of the capital. At the same time the country became involved in the great and costly wars that ravaged Northern Europe, siding with Russia and Saxony against Sweden in a vain attempt to recapture the provinces which had been lost to the latter country in the 17th century. Peace was established in 1726, but only two years later the great fire of Copenhagen laid two thirds of the city in ruins. It was rebuilt under strained economic

circumstances that were aggravated by falling corn prices and a resulting agricultural crisis which threatened to depopulate the rural districts. In consequence a decree of 1733 introduced a new sort of villeinage, prohibiting all male peasants between 14 and 36 of age from leaving their native parish, while the local landowners were authorised to call anybody up for military service at their discretion.

On the academic front the principal problem was to reconstruct the university after the fire. The central buildings and lecture rooms in the inner city were fairly quickly restored whereas it was much more difficult to replace the 35000 volumes of the university library which the flames had consumed. A beginning was made by the Icelandic scholar Arni Magnússon (1663-1730) who before his death left his large collection of books, including some 4500 Icelandic manuscript, in the care of the university. The king donated 2000 volumes from his own library which had survived unharmed, and other private collectors followed his example. In consequence the library could re-open already in 1731 on its old premises in the loft of the university Church of the Holy Trinity. This enabled the faculties of law and theology to resume their work, while both medicine and natural science had to wait until 1740, when the university got a new anatomical theatre and the Round Tower was provided with new instruments from Paris.

While the university thus slowly recovered its material facilities its structure and activity were reorganised by a set of new statutes dating from 1732. They increased the number of ordinary professors from twelve to fifteen and also did away with the old tradition which allowed professors to change their subject in order to obtain preferment from the poorly paid positions in mathematics or Greek to much more remunerative chairs in theology or law. This sensible innovation was to some extent counterbalanced by other measures; thus the separate chair of physics was abandoned, so that this discipline survived only as an introductory subject for medical students, but was still taught on the basis of the outdated textbook of Caspar Bartholin II. Otherwise there were some improvements of the curriculum; for instance the teaching of church history was made obligatory. In 1736 a special decree instituted an ordinary examination in law which enabled civil servants of the Crown to obtain a university education on a par with ministers of the church.

The great task of reconstructing the university engaged all the most able members of the academic establishment, for whom Lintrup's *Societas indagantium* was now a distant memory. However, outside their circles

a small group of less prominent scholars felt the need for a similar society and devised in 1740 a set of statutes for a so-called *Ven- og Videnskabs Laug* (Society for Friendship and Science) for the purpose of "promoting the arts and sciences, the common welfare and the well-being and decent maintenance of its members". The leading initiator of this project was the Lutheran minister Frederik Monrad (1702-1758) who was a Biblical scholar. Among the signatories of the statutes was also the promising young mathematician Christen Hee (1712-1781) who afterwards became professor at the Naval Academy (1742) and later at the university (1769). The statutes are vague on the scientific activity of the guild; but there is an interesting clause prohibiting any member from cultivating more than one discipline. Like the university statutes of 1732 this is a testimony to the growing dissatisfaction of the traditional, but now more and more impossible concept of a professor as a polyhistoric scholar moving easily from one discipline to another. The social stipulations of the statutes are more specific: the guild is set up in order to "help the members to obtain an assured income, or else as far as possible to support the impecunious". It is doubtful whether this strange combination of a learned society with an academic trade union ever existed except on paper. Nevertheless, it was a sign of the times that the idea of an academic association outside the university was once again revived. For at the very time when Monrad and his friends toyed with the idea of their guild, another academy of a more serious design was already being contemplated by a much more influential circle of scholars and officials who were very close to the king.

King Christian VI (1699-1746) succeeded his father in 1730. From the very beginning of his reign it was clear that his personal characteristics would decisively mark the way in which the twin kingdoms were governed in the critical decade of the 1730's when all efforts had to be spent on repairing the damage done to the economy by the wars and to the capital by the fire. The new king proved to be a meticulous and somewhat pedantic ruler who, more than other monarchs had done, kept an eye on all the details of the administration, assisted by a handful of able and loyal ministers, thanks to whom the Crown gained more control over public life than it had enjoyed before. While his agricultural policy was a failure, he was more fortunate in other economic areas, supporting the formation of the East Asiatic Company of trade in 1732, and adding a new College of Economics and Trade (1735) to the existing governmental departments. Seriously interested in education he was behind both the university reform of 1732 and the not quite successful

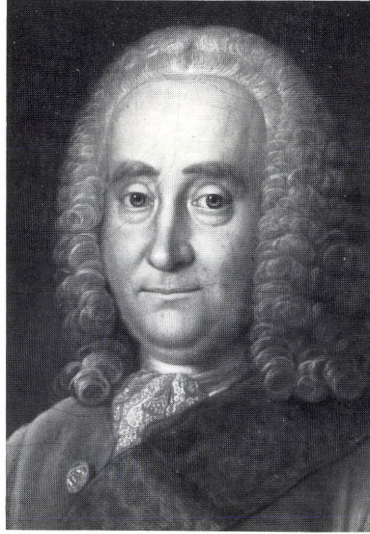
project of a compulsory education of all children (1739); he also supported a great scientific expedition to Egypt (1737-1739) led by the naval officer Captain F.L. Norden (1708-1742). Another new College for the Inspection of the Church (1737) enabled him to control ecclesiastical matters over the heads of the bishops, and to promote the pietistic movement in harmony with his own sombre and anxious religious convictions. In this he was at one with his German born Queen Sophia Magdalena, thanks to whom there was a considerable German influence at the court, where the Royal couple led a rather lonely and joyless life in the splendidly rebuilt palace of Christiansborg; German was the preferred language, and German applicants for favours and positions were frequent visitors.

The king became involved in the birth of a learned society in a rather strange and roundabout way. Christian VI does not seem to have been particularly interested in the great, but haphazard collection of works of art which had come into the possession of the Royal family over the centuries and since 1680 had been housed in a *Museum Regium* or "Art Chamber" above the Arsenal (which escaped the great fire) together with antiquarian and natural "curiosities" from many parts of the world. Nevertheless, in 1737 he found time to buy a large, private collection of coins and medals as a supplement to the existing collection, which was split between the Museum and the Palace of Rosenborg. It was then decided to bring the three collections together, get rid of duplicates and triplicates, and to compile a catalogue describing all the remaining specimens, according to a proposal from Johan Ludvig Holstein, who was First Secretary of the Danish Department of the Chancery. In May 1739 a Royal Rescript was accordingly issued and followed by a letter in which the King appointed Holstein, Professor Hans Gram, and the inspector of the Museum members of a Royal Commission to undertake the work. The coins and medals were transferred to the Danish Department, where the young Under-Secretary Henrik Henrichsen prepared most of the catalogue before the summer of 1740, when he left on his Grand Tour that took him to Germany, France and England. He was replaced on the Commission by the Royal Chaplain Erik Pontoppidan. The four members proved able to collaborate in a congenial spirit which bore fruit for the intellectual life of the country long after the Royal Commission had finished its work. But who were they?

On the administrative side of the Commission we find its most prominent member in the person of Johan Ludvig Holstein (1694-1769). He was born into a well-known Mecklenburg family and educated in Ger-

many before he entered the service of the Danish Court (1716), where he made a spectacular career, culminating in 1735 when he was made First Secretary of the Danish Department and Privy Councillor. Retaining these offices until his death, he was for more than one generation the central figure in the domestic business of the two kingdoms. In 1750 he was admitted to the highest rank of the nobility, having acquired a large estate and built the impressive baroque palace of Ledreborg (west of Roskilde) which is still owned by the family. Count Holstein was neither a colourful personality nor a glittering courtier; but he realised the idea of the perfect civil servant of the Crown, being loyal, conscientious and hard-working. His fair and competent administration combined with his blameless character and pious life commanded universal respect. Without pretending to be a scholar, – he was an old man before he taught himself Greek in order to read the New Testament in the original – he was genuinely interested in history, an excellent patron of the university, and an eager collector of books and manuscripts.

On the Commission Holstein was assisted by the young Henrik Henrichsen (1715-1780) who was a commoner, being the son of a merchant who had acquired sufficient wealth to become Burgomaster of Copenhagen, and to have his son privately educated under the supervision of such prominent scholars as Hans Gram and the historian Andreas Hojer before he studied theology and law at the university. The protection of Hans Gram gave him access to the Royal Library and led to a close friendship with the historian Jacob Langebek (1710-1775), who was Gram's secretary. The great family fortune allowed him to accept an unsalaried post in the Danish Department where Holstein discovered his intelligence and great capacity for work. On his long tour 1740-1742 he collected rare books for the great collector Count Otto Thott (1703-1785) as well as for his own library; at the same time he made himself known to notable representatives of the learned world, such as the Benedictine historian Bernard de Montfaucon in Paris and the President of the Royal Society of London, Martin Folkes, who had him elected a Fellow of the Society in 1742 to replace Captain Norden, who had recently died in Paris. After his return he served as a judge of the Supreme Court, and in 1747 he succeeded in getting ennobled as Count Hielmstjerne in order to be allowed to marry a young lady of the nobility. His importance as a collector can hardly be overestimated since much of the Danish literature of the 16th and 17th centuries was preserved for posterity thanks to his library, which later entered the Royal Library as one of its most valuable stocks.



Henrik Hielmstjerne, b. Henrichsen (1715-1780). Secretary of the Society (1742-1776) and its third President (1776-1780). – Painting by Jens Juel, copied by C. A. Lorenzen (in the possession of the Society).

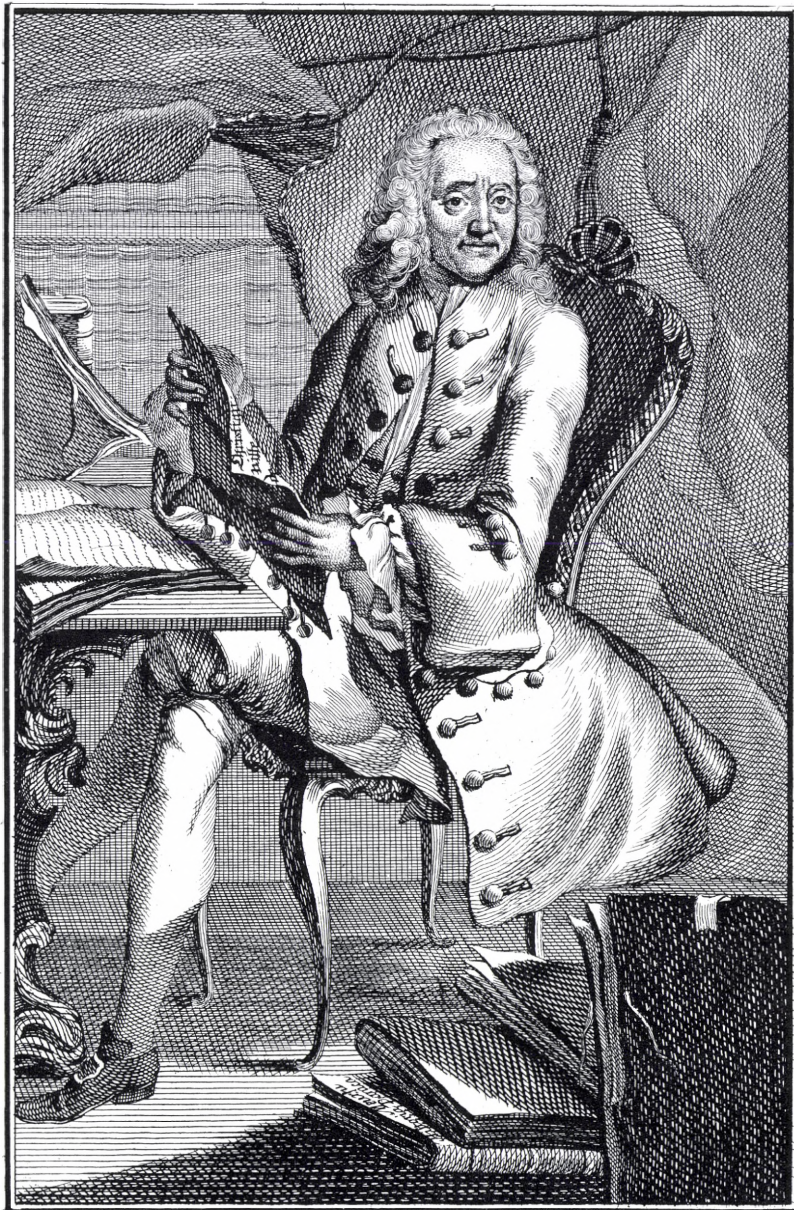
Count Johan Ludvig Holstein (1694-1763). First President of the Society (1742-1763). – Painting by C. G. Pilo (Copenhagen University).

The two academic members of the commission did not come from the high society of the capital, but were both the sons of Lutheran ministers and thus products of the ecclesiastical establishment, from which the one broke away while the other remained in the service of the Church. Hans Gram (1685-1748) came from the northernmost part of Jutland and went up to the university in 1703. Here he pursued an unusual career, avoiding theology in order to become a bachelor of arts in 1705 and a master in 1708 with classical philology as his principal subject. This did not prevent him from obtaining a scholarship in mathematics at the newly founded Elers College, where he published his first work, a dissertation *On the origin of geometry among the Egyptians* (1706). At the same time he became a prominent member of Lintrup's *Societas indagantium*, a fact which may have influenced him many years later when he became one of the founders of the Royal Academy. Sustaining himself as a teacher, he was given an unpaid position as professor of Greek at the university and found more time to cultivate his growing historical in-

terest. Despite his lack of theological education it was he who gave the first regular course of lectures in church history (1724), and soon the rumours of his immense historical erudition began to spread all over Europe. Scholars from many countries consulted him in writing, and without ever setting foot outside the country he became familiar with the major European languages. His many-sided historical research was mainly of an antiquarian nature, and he was always more concerned with detailed analytical work than with synthetic expositions – contrary to his colleague in the university Ludvig Holberg, who found him unable to distinguish between the important and the merely curious. But his fidelity to the source material was unswerving and his critical acumen extraordinarily sharp. It goes almost without saying that King Christian VI would engage the services of such an exceptional scholar; and Gram became the driving force behind the university reform of 1732, being burdened also with the important tasks of being Historiographer Royal, Royal Librarian, and director of the State Archives, while at the same time sitting on practically all special commissions concerned with scholarly or educational matters. That he also served with great assiduity as one of the directors of the East Asiatic Company shows the unusual versatility of his mind.

Erik Pontoppidan (1698-1764) also came from Jutland, but followed a more conventional ecclesiastical career, serving from 1726 as minister on the island of Als, where he collected material for a book on the customs, folklore, and superstitions of the population of the countryside. A *Memoria Hafniae* (1729) described the capital before it was destroyed by fire and was the first testimony to the topographical interest which was one of the great passions of his life. The other was the pietistic movement which spread from Halle all over the Lutheran countries. Its rejection of the “dead orthodoxy” and call to personal devotion appealed to his own religious temper. This was noticed by the King, who made Pontoppidan a Royal chaplain in 1735 and three years later gave him an extraordinary chair in theology, using him from now on as one of the principal agents for the attempts to channel the religious life of the country into more serious (i.e. pietistic) directions. Holstein also shared

Hans Gram (1685-1748). The principal founding father of the Society. The text lists some of his many offices: Royal State and Law Court Councillor, Royal Historiographer, Librarian, and Archivist, Professor of Greek at the University of Copenhagen. – After a print by G.V. Bauernfeind 1754 based on a death-mask.



Bauerfeind. Del.

J. Haas sculps. Hafn. 1754.

HANS GRAM,

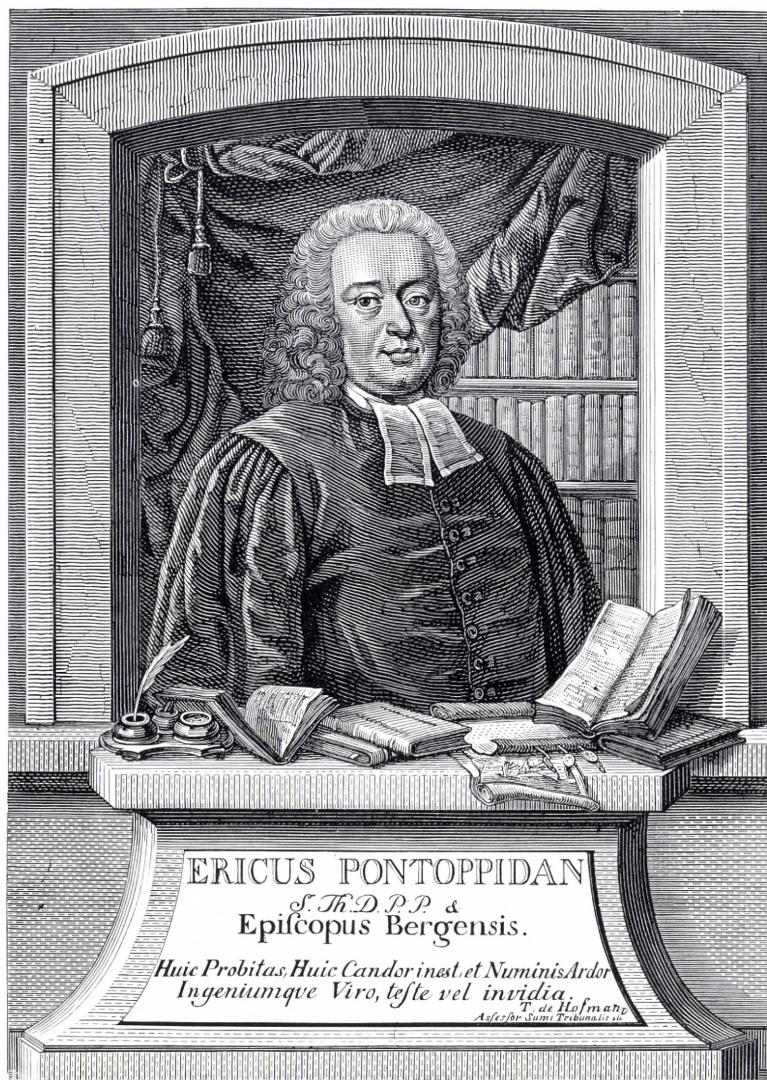
*Kongl. Majest. Etats- og Justitz-Raad, Historiographus,
 Kongl. Bibliothecarius, og Geheime-Archivarus,
 Profesør i det Græske Sprog paa Kiøbenhavns Univerfitet,
 Stukken, efter en over hans Ansigt, afføbt Gips-Form som findes hos C.P. ROTHE.*

this pietistic attitude, but it would seem that Pontoppidan was drawn into the work of the Commission on Coins and Medals because of his interest in epigraphy, which had borne fruit in a work on inscriptions entitled *Marmora Danica* (1739-1741). However, his real claim to fame rests on two major works of his later years, when his historical industry resulted in the great compilation of the *Annales ecclesiae Danicae*, which appeared in Latin in four volumes (1741-1752), whereas his other main interest led to the *Danske Atlas*, a detailed topographical description of Denmark which he left unfinished at his death; it was later completed and published by others.

Thus the Royal Commission on Coins and Medals was staffed by a truly exceptional group of eminent personalities capable of hard work, sharing a genuine interest in learning either as scholars or collectors, and working very well together. They were able to finish the manuscript catalogue of the collection already in March 1741; but now the King was persuaded by an immigrant French nobleman to use the catalogue as the basis of a printed "Histoire Métallique" of Denmark similar to the work which the French Academy of Inscriptions had published in 1702. This new task kept the commission busy for the next 18 months and even longer; but it was rather unproblematic routine work which would not really appeal to the scholarly interests of the members, who also seem to have been sadly worried by the fact that their happy collaboration would come to an end in a foreseeable future. But might it not be continued in another form or for a different purpose? It seems that it was Holstein who raised this problem with the King in a letter which has not been preserved. The King answered at once in a letter (in German) dated 1742 July 16. As usual addressing his subjects in the third person Christian VI informed his minister that

He is quite right that foreigners honour and highly esteem a country the antiquities of which are made known, such as the case is in Sweden (...), and so We desire that He initiates this useful work during the coming winter [Lomh. I, 10].

This Royal command was all that the members of the old commission needed. It authorised their continued collaboration under the presidency of Holstein, but now for a much wider purpose. It was no less than the "antiquities" of the country in general that should be made known, but not just the tiny fraction of the ancient heritage that consisted of coins and medals. It is worth noticing that the King explicitly refers to the situation in Sweden, where the Upsala *Collegium Antiquitatis* and its successor were pursuing the same goal; presumably Holstein had ex-



Erik Pontoppidan (1698-1764). One of the founders of the Society. – Print by C.H. de Lode after a painting by A. Brynnik 1749.

plained this to the King, arguing that in such matters it was not proper than Denmark should occupy a secondary position to that of Sweden. The immediate reaction of the commission members to the letter from the King is not known; they treated the matter with the utmost discretion, and the minutes of the following meetings contain no hint whatever that something new was in the offing. Even at the last meeting on November 6 everyone kept silent about it. But on November 10 Hans Gram made the last entry into the Minute Book, handing it to Henrichsen as a symbolic gesture that his work was finished and a new phase about to begin. And at the next meeting on November 13 the silence was finally broken. Coins and medals had now disappeared from the agenda, and Hans Gram opened the meeting by submitting a long and detailed proposal that a new *Collegium Antiquitatum* be created for the purpose of exploring and publishing the antiquities of Denmark and Norway. Although Gram's proposal was not adopted without significant modifications, it was, nevertheless, appended to the minutes of the meeting as the first official document of the society which would in the course of time evolve into the Royal Danish Academy of Science and Letters. Although some time would still elapse before the new society was properly set up, the Copenhagen Academy has ever since regarded 1742 November 13 as its official birthday.

Professor Gram's proposal was more than a first sketch. It was a lengthy and well-considered document that took all possible aspects of the life and work of a learned society into account. His main point was that in order to "please the King and honour the Fatherland" the society must be concerned not only

with the so-called antiquities in the strict sense of the word, such as ancient monuments, ancient customs, laws, constitutions, remnants of paganism and papism (sic), numismatics, the original Nordic language and whatever else belongs to the study of antiquities, but also with

the whole of Nordic history, in particular as far as it concerns Denmark and Norway and their dependent provinces and countries [Lomh. I, 1of.].

First page of Hans Gram's holograph proposal for a "Collegium Antiquitatum so arranged that it may please Your Royal Majesty and honour the fatherland". – From 1960 in the Archive of the Society, previously in the possession of the Royal Society of Trondheim, to which it had been lent prior to its foundation in 1760.

No. 1.

1. §. Et Collegium Antiquitatum, jaalder
 indrættat, at det Land nord derved Kongl. Majest.
 til fornødig og løbsslambt til det,
 som safor til Objectum, ikke alene de saa
 talrige Antiquitates stricto sensu, hoc est,
 Monumenta Vetera, Ritus antiquos, Leges,
 Constitutiones p. Reliquias Paganismi & Pa.
 pismi, Rem numismaticam, Lingvæ Septen.
 trionis præsam, og Raad surro alts til Sta.
 dium antiquarium sørrs; men tillige ogsaa
 den selv Nordiske Historie, i særdeleshed Staa.
 Danmark og Norge, og endvidere siggund Histori.
 cer og Land angaar. Saa lige Naad er
 det indrættat i Øverrige, og herfor taltes Colle.
 gium Historiarum & Antiquitatum, hvor
 grund sig alt Raad jaamal i de Nørre, som
 i de gamle Historier, siden An. 1662. er skrevet
 og udgivet, som Land gætt af den An. 1690.
 saa latins og Øndst trykt fortællelse.
 I Portugal safor den end angreunde Konge
 L. Johannes V. stiftet et lige Institut, som
 taltes alene Collegium Historicum, som tillige
 er tillige i sig alle de saamte Ting, som formentlig

2. §. Det jaadant at det, naar det skal stiftes ind
 og safor forgang, befores
1. derved Kongl. Majestets Sørr og allemaalig/
 Approbation, samt Protection.
 2. En Præses af Myndighed, der omf. er G. H. H.
 og indtræks befordrer af brud. Lærdis.
 3. Proponunt Membra (a) til Raadførere og
 Profes, (b) til lærere, og (c) til Medarbejdere og
 Sandtægter.
 4. Materialia, og nogetlunde forraad af de
 Ting, som end og herudi de skal arbejdes.

The Swedish *Collegium Historiarum et Antiquitatum* is once again invoked as an example to be followed, and so, too, is a newly founded *Collegium Historicum* in Portugal. Next Gram proposed a list of 14 potential members, from all social classes ranging from the immensely rich Count Thott to the poor Jacob Langebek and a couple of students from Iceland. The members of the former commission are not mentioned, but their participation must have been assumed as a matter of course. The members are to be grouped into three classes of eminent people, established scholars, and students respectively, — a scheme which clearly reveals that Gram was influenced by the French model of a scientific society. The document continues with a survey of the literary resources of the Copenhagen libraries, and ends with the proposal of a number of works for immediate publication under the auspices of the society; here Gram offers his own edition of the *Knytlingasaga* (which was already printed but not published) and also an edition of the letters of Abbot William of Ebelholt (d. 1203) which he had in preparation; they were to be followed by a succession of other historical sources that were already known to exist or that might be discovered in foreign libraries.

With this proposal Hans Gram had certainly complied with the wish expressed by the King. Somewhat maliciously it could also be said that he had proposed a society which would cultivate his own scholarly interests and assist him in his work at making historical sources available. This was of course perfectly legitimate; it is also understandable on the reasonable assumption that Holstein's first approach to the King in July had originated in his discussions with Gram. But be this as it may, already at the first meeting the proposal was not only carried with unanimous approval of the idea in general, but also with a pertinent criticism of a few particular points. Thus with respect to the purpose of the society Henrichsen recorded in the minutes that

it was deemed proper not to restrict oneself to only one definite branch of learning, and that the society ought to discuss all scientific and scholarly matters in general, but illuminate the antiquities and histories of the Fatherland in particular [Lomh. I, 19].

We do not know who the critics were. Clearly it cannot have been Gram, and it is unlikely that it was Pontoppidan, who worked in very much the same field. In consequence we must assume that either Holstein or Henrichsen, or both, were behind this amendment. In fact, as civil servants in influential positions they might well be aware of the growing importance of the natural sciences in a developing society in which technology was becoming increasingly important for the general wellbe-

ing of the country. However this may be, the important point is that the amendment meant a radical change of Gram's original idea: the new academy would not be just a society of antiquarians. There would be no restrictions on the disciplines it might wish to discuss, and in particular there would be room for both the natural sciences, and for the classical studies which Gram had also excluded from his own scheme. In other words, the Society was given the opportunity of catering for all possible disciplines of scholarly or scientific relevance to the ever changing field of learning in general. Until the present day the Society has respected this significant result of the debate at its very first meeting which opened the way for its future development into a truly national, multidisciplinary academy.

CHAPTER III

Consolidation and Expansion

In the first period of its existence the new society conducted its business in a remarkably informal and even carefree way. For more than thirty years there were no proper statutes defining its purpose or structure, no Royal Charter confirmed its privileges, and new members were admitted without regard, as it seems, to well-established criteria of scholarly merit. However, this vagueness of the new enterprise was more apparent than real and due to the special manner in which it came into being. Unlike the Invisible College in England one hundred years earlier and the similar circles around Mersenne and Thévenot in France, the founding fathers of the Copenhagen society were not a private group of scholars in quest of an official framework for their common work. They were all civil servants of high rank and already members of a properly established Royal Commission headed by one of the most influential and responsible ministers of the Crown; and with Johan Ludvig Holstein as intermediary their official occupation with the Coins and Medals of the Royal collection was to a large extent directed by King Christian VI, whose active interest in everything going on in his realm was much more than a pretension of an absolute monarch to be the mainspring or source of all public activity. Thus there could be no question either of the identity of the group or of the undisputed fact that Holstein was its president. The first members were still civil servants prepared to execute the Royal commands even down to the smallest details in which they were so often issued. In consequence, they would regard the Royal Letter of 1742 July 16 simply as an authorisation to extend the scope of the work which they had already learned to do in common.

Nevertheless, the new prospects must have been exciting since the weekly meetings in the two months following Holstein's uncovering of the King's wishes on November 13 developed into a kind of brainstorming sessions, in which members gave vent to a great variety of plans for their future collaboration. We can follow most of this inventive debate in the entries made by Henrichsen as secretary in the new, parchment-bound *Book of Minutes* which was begun in order to separate the new work of the Society from the old tasks of the Royal Commission. Of

fundamental importance was the second meeting (November 21), at which the amendment to Gram's original proposal was confirmed with the result that the doors of the Society would now be open also to mathematicians and scientists. At the same time it became clear that projects of publication loomed large in the minds of the members. Holstein proposed that they should take care of the publishing of a great literary history of the duchies of Schleswig and Holstein, written by the Flensburg headmaster Johannes Moller (1661-1721). This idea was unanimously adopted, and Pontoppidan was asked to acquire paper that had to be both good and cheap, while Henrichsen made arrangements with a printer. The work was seen through the press by a son of the author, and already at the beginning of 1744 the *Cimbria literata* appeared in three folio volumes, prefaced by Hans Gram, as a testimony that the Society was able to handle the publication of a major work in a competent way.

Another project launched at the fourth meeting (December 4) caused more trouble. It was suggested that the Society might publish an official description of the Royal Progress through Norway (1733), for which the plates had already been made by an immigrant French engraver. But his work was found to be of an inferior quality; an attempt to have the copper plates re-worked by a local engraver failed, and in the end the project had to be abandoned. However, at the same meeting the question of the Society's own publications came up for the first time. A preliminary debate resulted only in the decision that the contributions of the members should be published *pele mele* as they appeared (without any systematic arrangement), since this was the practice of the foreign academies in Sweden, Prussia, and France [Lomh. I, 22].

This rather hectic preoccupation with publishing seems to have worried Professor Hans Gram a little; at least some of his interventions at these first meetings can be construed as implicit reminders that more scholarly work should not be forgotten. Already at the second meeting he suggested that the members of the society ought to embark upon specific research projects. One week later he handed the secretary a little slip of paper on which he had briefly outlined (in Latin) the draft of a paper which he might contribute himself; it concerned the disputed year of King Canute's journey to Rome (in 1027) and was as such a typical testimony that his antiquarian more than historical proclivities would dominate his own ideas of the purpose of the Society. His little note is still appended to the Book of Minutes as the first evidence that a scholarly spirit was alive among the members from the very beginning of their association. At the seventh meeting (1743 January 8) Henrichsen

set another example by submitting a small and already printed publication of his own concerning six Danish coins he had found in other countries; this time Gram profited by the occasion by suggesting that no meetings should be held without one of the members having something to read. In consequence Henrichsen read his pamphlet on the six coins at the following meeting (January 15) and the next week Gram began the reading of a long paper in which with obvious satisfaction he tried to confound the English historians with respect to the Roman journey of King Canute. Gradually the tradition of submitting and reading original papers was firmly established, although in the beginning it was somewhat restrained by the ordinary procedure of the meetings, practical business being transacted first and papers read afterwards.

This lively outburst of both actual projects and plans for the future during these first weeks shows how fast the activities of the new society were gaining momentum. But it also indicated the need of a more precise and officially acknowledged definition of its purpose. This appeared on 1743 January 11 in the form of a Royal Letter addressed to Holstein and others on the Commission concerning the Danish Coins and Medals. Here the King expressed his desire that the members of the Commission would extend their work beyond the field of numismatics. With obvious reference to Gram's original proposal Christian VI wrote that

First and foremost you must pay attention to anything that is in any way connected with the histories of Our realms and countries, both in general and with respect to details, and also their geography, the languages, and all ancient and new matters, be it something with which you are already familiar or something you may be able to discover through closer investigation, industry, and study, so that all this may be produced and discussed from time to time at your regular meetings under the presidency and direction of Privy Councillor Von Holstein, so that together you can discuss what it may be useful and proper to publish [Lomh. I, 24f.].

This was nothing more than a brief summary of what Gram had submitted two months before; but now the King or his minister seems to have realised that the commission would be unable to undertake a new programme of work on this scale without assistance. The letter continues,

For which purpose you are free to select and admit other men who are knowledgeable and experienced in science and learning according to your own judgment, either as advisors or as collaborators on the said matters, or who are found to be willing to provide some-

thing for the said undertaking out of their own libraries or other possessions.

This passage cannot be construed as a general permission to extend the Commission as such by new members in the strict sense of the word; all it said was that the Commission ought to organise its research projects in such a way that it could draw upon both the expertise and the private libraries of scholars of the capital. However, the next section of the letter envisages the extension of the list of members in agreement with the amendment to Gram's original and more restricted concept. In words that almost imperceptibly indicate the transition from the old Commission to the new Society the King wrote that

Next you must consider inviting to the same Society *<sic>* those who have proved able to produce discoveries that are worth noticing and publishing in Natural History and the medical, mathematical and mechanical sciences so that they may contribute to the increase of the aforementioned sciences and to the praise and fame of the authors.

Having thus authorized the general and comprehensive basis of the society, the letter ends with a long passage (in the extremely convoluted style of the Chancery with 135 words between full stops), in which the King promises

when the time comes to assure the same *<Society>* of our High, Royal protection, and of such Graces as We may most graciously bestow for its conservation according to your *<own>* most humble proposals and more specific suggestions.

However, this Royal favour is made subject to two conditions, the first of which is that

such pieces [i.e. accounts of new discoveries] will be published in printed form in certain collections together with other papers that may be written about the history and antiquities of the Fatherland and about all other sciences after the manner of other societies,

while the other appears in the rather obscure final passage stating that

We should feel that this Our most gracious and well intended proposal, – aiming at the general honour of the country and the adornment and utility of learning which We hereby most graciously recommend to you as something that is most agreeable to Ourselves, – would be pleasantly promoted so that it may be hoped that the said Society may not only continue to exist, but also may increase in the course of time.

This letter has sometimes been construed as no less than a Royal Charter

to the new society, with the implication that its true birthday would be 1743 January 11 when the letter was issued. That it was no such thing becomes clear when we consider both what the letter said and what it left unsaid. On the one hand it was primarily a Royal approbation of something upon which the members were already agreed among themselves, with particular reference to the inclusion of all scholarly and scientific disciplines within the compass of their activities. This was followed by a concrete admonition to publish their contributions in serial form, and by a more delicately expressed hint that the survival and expansion of the society presupposed that it did nothing to displease the King. But on the other hand such stipulations were by no means sufficient to make the letter a proper charter of the Society. Quite apart from the fact that it was not addressed to the new Society, but to the Chairman of the old Commission, it did not mention the Society by name; it advised the admission of more members without indicating how and on which criteria this should be done; although Holstein was clearly singled out as President of the Society the letter did not touch upon its internal structure and organisation; and finally it was completely silent on the important question of how its various activities should be financed. So if the members had expected to be granted a Royal Charter at this early stage, they were disappointed; as we shall see they had to wait until 1774 before such a document was forthcoming. However, it is also possible to regard this long delay in a more positive light. The absence of definite statutes and imposed rules of procedure left the Society free to arrange its own affairs and conduct all its business according to its own decisions, as they were taken from time to time when circumstances called for them. So everything considered, the long "lawless" or experimental period was a blessing which enabled the Society gradually to find a viable way of life, leaving it to future statutes or charters to confirm the unwritten rules that had already stood up to the test of a long practice. It is true that it would always be important to keep an open eye on what would please the King. But as long as the country was governed by a competent and benevolent monarch with the President of the Society as his trusted minister, this was no real problem. In fact the work of the Society was never disturbed from above, nor was its existence endangered, until the great crisis of the monarchy after 1770 had inevitable repercussions upon its life.

The new Society was immediately confronted with a number of problems, among which the acquisition of more members was given priority. In the absence of definite rules of election several procedures were pos-

sible and actually tried out during the first decade. As we have seen, Gram's original proposal envisaged a society divided into three classes of honorary, ordinary, and adjunct members respectively; it was accompanied by a list of fourteen possible candidates of widely different ranks, including Pontoppidan and Henrichsen from the old Royal Commission. Holstein's name was absent since he was already President by Royal appointment, just as Gram was either too modest to nominate himself, or too sure that his membership would be taken for granted. A discussion at the second meeting (1742 Nov 21) resulted in an invitation to eight persons on Gram's list to join the Society as ordinary members. Among them were Pontoppidan and Henrichsen (who was asked to act as secretary) from the former Royal Commission, but not Gram, whose membership must now have been a matter of course. The others were all professors in the University, such as the church historian Marcus Wøldike (1699-1750), the historians Bernhard Møllmann (1702-1778) and Ludvig Holberg (1684-1754), the librarian Hans Peter Anchersen (1700-1765), and the jurist Christian Ludwig Scheidt (1709-1761). Wøldike, Møllmann and Scheidt immediately accepted the invitation by turning up at meetings in December and January, whereas Anchersen's name does not figure in the minutes until several years later for reasons that are not clear.

Much more intriguing was the reaction of Ludvig Holberg, who was undoubtedly both the most versatile spirit and the best known public figure among those who were invited. Born in Bergen in Norway and educated there and in Copenhagen, he was widely travelled and well acquainted with the general ideas of the Enlightenment, which he had propagated in a succession of historical and philosophical works marked more by their excellent style and mastery of the Danish language than by profound scholarship or critical method. In great satirical works in verse and prose he had exposed the prejudices and follies of human nature in general and of his countrymen in particular; but he had won his lasting claim to fame as a playwright with a long series of comedies in which with good-natured satire and irresistible humour he commented upon many aspects of contemporary life. The plays were performed in the 1720's with great success at the first public theatre in Copenhagen and remain until today on the national repertoire as a highly treasured heirloom from the time when the Danish language came into its own. That Holberg should be invited to the new Society was as obvious as his reluctance to join it seems strange to posterity. Without directly declining the honour bestowed upon him, he always

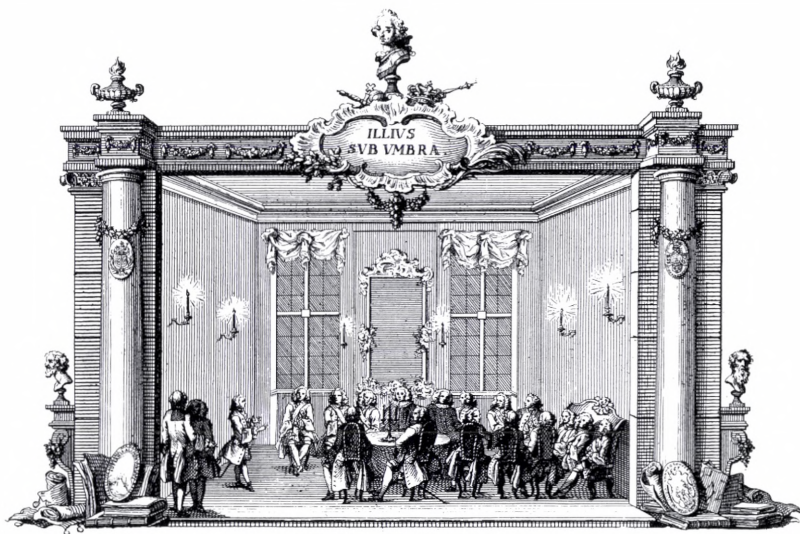
assumed an ambiguous attitude towards the Society. It is true that he submitted two papers, one on cattle disease (1745) and another on naval history (1746); but they were read in his absence by Gram and Henrichsen respectively, and as far as we know, he never attended a meeting. About his reasons we can only guess. Perhaps he wished to distance himself from Gram, whom he viewed as an incurably pedantic antiquarian. Perhaps he also resented the close connections between the Society and a pietistic Monarch, whose personal idiosyncrasies had prevented the theatre from re-opening after the fire.

This first extension of the membership of the Society had a strong bias towards that kind of historical and antiquarian scholarship which Gram had seen as its proper field of interest. It appears from the minutes that there was some talk of nominating the mathematician Christen Hee, but this was kept in abeyance for years to come. In consequence, the only scientist among the first members was Joachim Frederik Ramus (1686?-1769), a Norwegian who occupied the chair of mathematics at the University during the long period from 1722 until his death. As a mathematician he was both unproductive and incompetent, his only publications being four insignificant papers from his student days. But in December 1742 he was asked to assist the Society with the copper plates illustrating the King's tour in Norway, on the ground that he was an amateur engraver himself, after which he remained in the Society, perhaps because nobody wished to ask him to leave. But the scientists were not the only notable omissions from the list, which did not mention the four young scholars who figured in Gram's first proposal as possible adjunct members destined to serve as research assistants of the ordinary members. In this way the Society deprived itself of the services of the brilliant young antiquarian Jacob Langebek (1710-1775), who had already made a name for himself apart from being the protégé of Hans Gram. There may have been more reasons than one for this omission. Perhaps the candidates were regarded as too young, although Langebek was only one year younger than Scheidt. Possibly there was also an element of snobbism behind the decision, since they were all rather poor students who would have mixed badly with the august ranks of the other members. More decisive was no doubt the fact that the Society had no financial means for providing the adjunct members with the salary which Gram had envisaged. And finally it was soon revealed that Langebek's professional pride would prevent him from accepting a subordinate position of this kind; at least in a letter of 1742 December 25 he confided to his friend Terkel Kleve (who was proposed for ordinary

membership, but not invited) that "I must ask either to be wholly free or to wait until I can deserve a place among the proper members. For in a Collegium which cares for precisely those matters which I alone have cultivated for eight years I would not like to be a boy under several persons who have never looked into such things (...) moreover I have opened my mind to a good friend who is welcome to raise the matter again" [Lomh. I, 248]. This last remark referred to Henrichsen, who may well have felt that it would be better to wait until Langebek had calmed down.

While the younger generation of scholars were left out in the cold, the Society did not forget the worthies whom Gram had proposed as honorary members. It was not his intention that they should take part in the ordinary work of the Society, but lend the glamour of their rank or title to it without regard to their scholarly merit, but obviously in expectation of the special services they might be able to offer in consequence of their personal qualities or social position. It goes without saying that Holstein would belong to this group. It was also natural to elect Henrichsen's patron Count Otto Thott, whose international connections might help to establish the status of the Society abroad. Among the first honorary members there were also commoners such as the lawyer and former judge Niels Foss (1670-1751), who like Thott was a great collector of books; he had also played a small role in the pre-history of the Society since it was the purchase of Foss's collection of coins and medals which had moved the King to establish the first Royal Commission in 1739 with which it all began. More scholarly considerations were behind the election of Frederik Rostgaard (1671-1745), who was famous as a man of letters and perhaps the most learned scholar outside the pale of the university.

Honorary members were never elected in great numbers, and their existence as a separate class did not affect the work of the Society, the meetings of which they rarely attended, of course with Holstein as a conspicuous exception. Nevertheless, they formed an important group, in so far as it seems to have been an unwritten law that the successive presidents of the Society would be found among them. Since the great majority of the honorary members belonged to the nobility, this had the consequence that until 1831 the Society had no commoner as president with the only exception of Bolle Willum Luxdorph (1716-1788) who served in this office from 1780 to 1788. As long as the absolute monarchy was the unquestioned principle of government, no one took excep-



The first picture of a meeting of the Society, held 1751 January 18, when the young son of the President was invited to address the members on the occasion of the third centenary of the reigning dynasty of Oldenburg. — From an engraving by O.H. de Lode in the printed edition of the address published by the Society in 1752.

tion to this system; but in the 19th century it was felt to be more and more out of step with the times, the growing numbers and increasing self-esteem of the scholarly world making it natural to suppose that it would be able to govern its own affairs. The 29th and last honorary member was the courtier Johan von Bülow (1751-1828), who was elected in 1815, and in 1839 the class as such was abandoned. The election in 1894 of Crown Prince Christian Frederik (1843-1912) as honorary member was, therefore, an exceptional event, but certainly justified by the fact that the Prince showed a remarkable and genuine interest in the Society, attending no less than 61 of its ordinary meetings before his accession to the throne as King Frederik VIII in 1906.

In this group we also find the first foreign members of the Society. As mentioned above, Henrichsen had in England made the acquaintance of Martin Folkes who was president of the Royal Society of London (from 1742 to 1752), of which Henrichsen had become a fellow. On Henrichsen's proposal Folkes was elected an honorary member at the meeting

1745 October 6, at which the same honour was also bestowed on Ludvig Holberg. Folkes's successor as president of the Royal Society, the insignificant astronomer George Parker, 2nd Earl of Macclesfield, was also elected an honorary member. On his death in 1764 this incipient tradition was discontinued. Future presidents of foreign academies were often elected to ordinary memberships, but never again given honorary status. The only other foreign honorary member was Benjamin Thompson, Count Rumford (1753-1814), who was elected in 1803 in his capacity as the director of the Royal Institution in London, which he had founded in the previous year as a centre for the popularization of technology and science.

As we have seen, the Society began its existence with only seven ordinary members (apart from the President), six of whom were historians or antiquarians, while the mathematician Ramus was not so much a chosen representative of his discipline as a consultant in engraving. This composition of the membership was no doubt after Hans Gram's own heart; but it certainly ignored the amendment adopted at the second meeting, according to which the Society would make room for all disciplines. However, for several years it proved singularly reluctant to comply with this resolution by electing new members. In the meantime an unexpected event took place when another learned association suddenly emerged on the scene. The Society for the Improvement of Danish Language and History was founded in December 1744 by none other than Jacob Langebek. His motives are not clear; but he may well have lost patience with the Society, which refused to accept him because of his poverty and lack of social status and in spite of his scholarly competence, which was generally recognized. His new association started with a striking proof that its founder had also practical matters well in hand, for already on New Year's Day 1745 it published the first number of its journal *Danske Magazin*, six months before the Society after three years of preparations was able to publish the first volume of its own publication. This made it an obvious question whether Holstein's great and Langebek's "Little Society" (as it was soon called) would enter into a fruitful collaboration or divide the scholarly world of the capital into inimical factions. The latter danger was happily averted thanks to the close relationship between Langebek and his mentor Hans Gram. Gram was decidedly against Langebek's election to the Society, a fact of which the younger scholar must have been aware. Nevertheless, Gram opened his own house for the meetings of the new society and took part in them himself, while Langebek showed his good will by inviting Henrichsen to

join him. Henrichsen's acceptance and Gram's benevolence paved the way for a harmonious co-existence, and only a year after its foundation the new association was given the highest possible approbation, when King Christian VI consented to being its protector. In 1747 his successor Frederik V confirmed its existence as *Det kongelige danske Selskab til den nordiske Histories og Sprogs Forbedring* (The Royal Danish Society for the Improvement of Nordic History and Language). Moreover it was also provided with both its own seal and properly written statutes regulating its affairs at a time when the earlier Society still conducted its business as best it could, on the sole basis of Holstein's authority as a minister of the King. In the course of time Langebek's society had its good as well as bad fortunes; nevertheless it (and its *Danske Magazin*) has survived until the present with a list of many important publications to its credit.

Perhaps it was the sudden emergence of the new association which at last persuaded the Society that the time had come for extending the membership by scholars representing other than historical disciplines. The matter was officially discussed at a meeting 1745 October 6, when the president nominated three candidates, who were duly invited to join the Society. They all accepted this invitation and soon began to attend the weekly meetings. Among them was the young Henrik Stampe (1713-1789) who had obtained the chair of philosophy at the university. He had studied under Wolff in Marburg and shown some interest in mathematics and physics, before he switched to law as a basis for his later, brilliant career in both the university and the government. The two other new members were both professors of medicine. One of them was the German born and rather aged Georg Detharding (1671-1747), who had succeeded Caspar Bartholin II in 1732. He had made no significant contributions to medicine and is now best remembered for his obdurate fight against the new School of Surgery, which had been created in 1736 outside the university. His colleague Balthazar de Buchwald (1697-1763) was equally opposed to this long-overdue attempt to supplement the purely medical education offered by the faculty. He had a more positive record as a keen promoter of the education of midwives, being also the first to offer lectures on obstetrics to medical students. From an objective point of view there is no doubt that the two medical professors were second-rate representatives of their discipline; but they were the best the university had to offer in this field, and the Society took them on as a testimony that it was now prepared to open its doors more widely than before. However, the mathematical sciences were still left out, although there had been once again some talk of electing Christen Hee. It is

possible that Holstein found that these disciplines were sufficiently represented by Ramus. But if this was the case he was soon disabused, for only three months later the astronomer Peder Horrebow (1679-1764) took the unprecedented step of announcing his wish to become a member of the Society. He had been a student of Roemer's and was a highly competent and productive astronomer, who had in 1734-1735 secured his European renown by publishing the three volumes of his *Basis Astronomiae* in which Roemer's work in general and his invention of new and epochmaking instruments of observation were carefully described. Thus there could be no doubt that he was much better qualified for membership than his two medical colleagues. His application was granted without hesitation, and two weeks later Horrebow made his entry into the Society by reading a paper at one of the ordinary meetings, – a gesture which it now became common for new members to make in recognition of their election.

Horrebow's nomination of himself served as an obvious reminder that the Society would do well to remember the amendment to Gram's original proposal. If the membership was to be properly balanced, it ought to include scientists in greater numbers. After a delay of another year the Society came at long last to the same conclusion, and at the same time it also demonstrated that it was now willing to take also the younger generation in hand. At a meeting in May 1747 no less than four young mathematicians were proposed and elected, although they were only at the beginning of their academic careers and were adopted in expectation of future achievements, but not of great merits of the past. Among them was Christen Horrebow (1718-1776), a son of the astronomer, who had been designated as his father's successor. Similarly, the young Ernst Ziegenbalg (1716-1758) was designated as professor of mathematics, a position he never obtained because Ramus outlived him. Now the turn also came to Christen Hee (1712-1782), who was admitted after five years of waiting behind the scenes and soon became one of the most dynamic forces in the Society, always advocating a stricter organisation with definite laws and rules of procedure. Towering over them all was the brilliant Jens Kraft (1720-1765), who had presented his credentials in a rather unusual way. He had finished his three years of study abroad with a long stay in Paris, where he had become acquainted with the new French school of mathematical physics which was completely unknown in the largely Cartesian circles of Copenhagen. This had led him to write a long and detailed exposition of the reasons why Newtonian mechanics was the only solid point of departure in physics. This paper was highly

unusual, both for being written in Danish and for the advanced mathematical formulae with which Kraft argued his case. The paper landed on the desk of Hans Gram, who asked Stampe to read it at three successive meetings of the Society, of whose members perhaps Horrebow would be aware that this was a veiled, but ruthless condemnation of the very poor state in which Caspar Bartholin II had left the teaching of physics in Denmark. Fortunately this did not prevent Kraft's election, which was no doubt also facilitated by his appointment to the chair of mathematics and philosophy at the newly re-established Equestrian Academy in the little town of Sorø fifty miles west of the capital. Here Kraft spent the rest of his brief and busy life as an industrious author of text-books among which the two volumes of his *Forelæsninger over Mekanik* (Lectures on Mechanics) (1763-1764) of a total of 1600, pages gave a remarkably lucid introduction to Newtonian physics, written in Danish in a clear and poignant style which made the author one of the fathers of the modern Danish language. Kraft never got preferment to the university of Copenhagen, where his great work was never used as a textbook with the result that the introduction of the new physics into Denmark suffered a disastrous delay of a whole century. That Kraft also wrote a pioneer work in anthropology, *De vilde Folks fornemmeste Indretninger, Skikke og Meninger* (The Principal Institutions, Customs, and Ideas of Savage Peoples) was another testimony to the versatility of his mind.

With the election of the four young mathematicians in 1747 the Society may have thought that it had fulfilled its obligations to the scientific world, and Holstein may well have envisaged another quiet period without new elections. If this was so, his plans were perturbed by the death of Hans Gram in February 1748. This was a most serious loss, which deprived the little circle of its – from an academic point of view – most prominent member, who had given more thought and energy to its affairs than anybody else, and whose ideas had been almost normative for its life and work; at the same time he had always been prepared to abandon them when his fellow members convinced him of being in the wrong. But Gram's death also meant that there was no longer any strong opposition to Langebek's membership, and in April 1748 he was unanimously invited to take that seat in the Society to which his work and reputation entitled him.

The machinery for the next election was set in motion in September 1749, when Holstein proposed "that the numbers of the Society ought to be increased, in particular by scholars who might contribute something to physics and mathematics" [Lomh. I, 237], asking the members

to think about possible candidates before the next meeting. But now Christen Hee showed the first sign of his life-long interest in the affairs of the Society by maintaining that it would be wrong to proceed to new elections as long as the Society had no definite laws. His motives are not clear, but he seems to have been uneasy with the apparently arbitrary manner in which the President had handled all the previous nominations without well-defined criteria of eligibility. However, on this occasion Holstein took a firm stand, repeating his proposal, and again asking each member to submit the name of one single candidate. As usual Holstein's proposal was carried, with the result that the year 1750 came to mark a record with the election of no less than thirteen new members representing a wide spectrum of disciplines such as genealogy, history of law, church history, philosophy, medicine, physics, mining and engineering, and classical studies, rhetoric, and librarianship. Among the new members were four German-speaking scholars without any formal connection with the academic life of the capital. One of them was a very aged professor at the University of Kiel; two others were titular professors at the Gymnasium at Altona, while the fourth was a rather obscure medical practitioner in the island of Femern. But working in Holstein as subjects of the king they were elected ordinary members. Foreigners in the strict sense of the word were still not considered for ordinary membership. In the following years a few foreign scholars were elected for occasional reasons; but in 1771 they amounted only to seven, and as we shall see, it was a long time before the notion of foreign or corresponding members emerged so clearly that they could be said to constitute a particular class.

Here scholars from the Scandinavian countries formed a special case. The union between Norway and Denmark meant that Norwegian scholars were not regarded as foreigners but admitted, at least in principle, on a par with their Danish colleagues. On the other hand it cannot be denied that the Society was very reluctant to admit foreign members from Sweden, although the Swedish Society in Stockholm had elected Raben as its first foreign member already in 1745 and later six other scholars who were all members of the Copenhagen Society. This lack of mutual recognition became so conspicuous that in 1779 the Danish ambassador to Sweden wrote to the Danish minister of foreign affairs, intimating that it would be proper to ask the Society to redress the balance. A copy of this letter was sent to Hielmstjerne with the result that the Swedish astronomer P.L. Wargentin was elected in the same year. Then nothing happened until 1785, when the secretary of the

Swedish academy raised the matter with his Danish counterpart (Thomas Bugge); the following year three more Swedish members were admitted. Then there was another pause until 1800 and 1801, and again until 1811, when the famous chemist J. J. Berzelius was elected. The only reason for this obvious discrimination must have been the anti-Swedish attitude following in the wake of the almost 70 years of intermittent warfare with Sweden and the loss of Scania and other Danish provinces on the peninsula. The situation did not improve after 1814, when Norway came under Swedish sovereignty; only six Swedish members gained admittance from 1826 to 1867, when five more were elected as an almost demonstrative signal that a period of normal relations had begun.

In the United Monarchy Norway occupied a special position. It had no university or other academic centre of its own, and the huge distances from South to North prevented Norwegian members of the Society from collaborating except by correspondence or on occasional and rare visits to the Danish capital. This led to the idea of emulating the Copenhagen Society by a similar institution on national soil, and in 1760 this was achieved by the Norwegian polyhistor Johan Ernst Gunnerus (1718-1773), who had become bishop of Trondheim in 1758 after a brilliant career at the universities of Jena and Copenhagen. Together with the historian Gerhard Schiöning (1722-1780) and his Danish colleague Peter Frederik Suhm (1728-1798), both of whom had been elected to the Society in 1758 (while Gunnerus had to wait until 1769), he founded *Det Trondhjemske Lærde Selskab* (The Trondhjem Learned Society) which was officially recognized in 1767 as The Royal Norwegian Society of Science.

It would be tedious here to pursue the following elections in any detail, for in a historical perspective the great election of 1750 stands out as a decisive event in the early history of the Society. This was not so much because it doubled the number of fellows, as because it was conducted in a new way. Previously the President seems to have had all the initiative in nominating new candidates, although Holstein always knew the importance of asking the advice of the other members, in particular Henrichsen and Gram. Now he adopted the new policy of entrusting the nominations to the ordinary members of the Society; this made each one of them responsible for its future composition. It also subtly changed the status of the President from being the almost all-powerful representative of the King to becoming more of a *primus inter pares*. Another effect of this new policy was that the members were enabled freely to propose those candidates whom they considered, on their own criteria,

to be the most appropriate, regardless of social status or official employment. This meant in particular that Gram's original idea of admitting all university professors to be *ex officio* members was quietly abandoned, never to be heard of again. Thus a tradition was established which all later statutes of the Society have taken care to uphold, – that members should be admitted upon criteria of merit, but not of office. It goes without saying that it has not always been possible to live up to this lofty ideal, and that there have now and then been cases when even eminent scholars have been overlooked or rejected. But this may well have been the price to pay for the immense academic importance of a principle which prevents scholarly nonentities in high places from claiming membership as a right.

The election of 1750 also demonstrated that the Society had by now learned how to live up to its original decision of catering for all fields of science and scholarship without restriction. Practically all disciplines were now represented in a common association in which no single fraction played a dominant role. Reflecting on this development, it has to be acknowledged as a fortunate circumstance that the Society was led by a President and a Secretary who were both high-ranking civil servants without scholarly pretensions and with no personal interests at stake. This enabled the gentle diplomacy of Holstein to start from the purely antiquarian concept that was the soul of Gram's enthusiasm, then to proceed in measured steps to the admission of the medical profession, then to the mathematicians and physicists, and finally to arrive at a fair and proper blend of all disciplines, – and all this over a period of only eight years. In this connection Holstein's constant reluctance to regulate the affairs of the Society by laws and statutes must also appear as a blessing. It could easily be construed as motivated by a wish to be able to govern the Society without the restrictions imposed by formal rules. But it would seem to be out of character with Holstein's personality. It is true that he was invested with an unquestionable authority that derived directly from the absolute sovereignty of the monarch he served. But he used it with great discretion and without dictatorial attitudes, so that his aversion to a statutory organisation of the Society did not stem from any personal lust for power. Rather, it was founded upon the wisdom and experience of a statesman who knew that hasty laws are soon repealed, and that no viable human association can begin its existence by devising laws that pretend to apply to all future circumstances. So if the Society was to have laws, it would be after a period of "lawlessness" in which problems would be noticed as they appeared and good or bad solutions

tried out by experience. This attitude demanded both courage and patience. In particular it would seem frivolous to admit members without having precise criteria for evaluating their worthiness, into a society that had no more strictly defined purpose than being of service to the scientific life of the country. But on this point history has justified the faith of its founders. In the following we shall consider the ways and means they adopted in order to accomplish their task.



The exterior of Count Holstein's mansion at 10, Stormgade, where the Society met during the first twenty years. The oldest part of the building is from 1687, architect unknown. The facade is practically unchanged since Holstein's death in 1763. A memorial plaque will be unveiled in 1992. (Courtesy of the Ministry of Housing and Building, owner since 1971).

CHAPTER IV

In the Service of the King

The Society's years of expansion and consolidation were also a period of intense activity in which the members explored most of the avenues for their future work. We shall here briefly consider some of the undertakings of the Society in this initial phase, concentrating on how the ordinary routine of its business emerged, while some of the larger, long-term projects must be portrayed in separate chapters.

The most obvious purpose of a learned society was that its members should meet in order to exchange their personal views on the matters they decided to pursue in common. Here the problem of finding a place to meet was easily solved. The earlier Royal Commission of Coins and Medals had usually met once a week at the house of its president, and when Holstein assumed the presidency of the new Society, he put his house at its disposal more or less as a matter of course. Since 1730 he had lived in a comfortable and spacious mansion in what is now No 10 Stormgade, a short residential street leading from the city wall to the canal separating the city from the island on which the Royal Palace of Christiansborg and most of the government offices were situated. This presidential generosity inaugurated a tradition that the members of the Society met at the domicile of the President, so when Count Otto Thott assumed this office after Holstein's death in 1763, the meetings of the Society were held at Thott's residence, a large and beautiful palace built 1683-1686 in the style of the Italian Renaissance by the famous Admiral Niels Juel and acquired by Thott in 1761 as a suitable frame for his large library of no less than 200,000 volumes. This was by far the largest collection of books ever in the whole country and as such of great value to the members of the Society and other scholars. The palace still stands in what is now the great square of Kongens Nytorv, being since 1930 the seat of the French Embassy. However, the Society was not destined to remain on such convenient premises for more than a few years. Count Thott was forced to resign from his government office in the political turmoil of 1770 and therefore felt unable to continue as head of a Royal Society. In consequence the Society was deprived of its home until the following year, when Hielmstjerne as Secretary invited it to meet at his own house in Frederiksholms Kanal not far from Holstein's mansion.

This situation lasted until 1776, when the King granted the Society the use of two rooms in Prinsens Palæ, a palace between Stormgade and the canal acquired by the Crown and rebuilt 1743-1744 by the Royal Architect Eigtved as a residence for the Crown Prince. It still exists as a part of the present National Museum. Now for the first time the Society had its own premises, and the members were freed from the somewhat awkward situation of being the personal guests of their President. This change explains why it was possible in 1780 to elect a relatively poor commoner such as Luxdorph as President instead of a member of the nobility. From the same year is the first extant inventory of the Society's modest belongings. They comprised an iron-bound chest containing the records, letters and medals of the Society, a cupboard for books, maps and copper plates, a table with a green table cloth, eight chandeliers with two snuffers, two inkstands, a pair of scissors, a ballot box with balls, a hand bell, – and two chamber pots.

The Society worked undisturbed at Prinsens Palæ until 1794, when on February 26 the Palace of Christiansborg was almost completely destroyed by fire, with the result that several government departments suddenly found themselves in the street. In consequence the Society was immediately ordered to hand over its premises to the Supreme Court and to move its belongings to a room at Charlottenborg (the seat of the Royal Academy of Arts), already used by the "Little Society" founded by Langebek in 1747. This arrangement proved to be very unsatisfactory, and several other possibilities were examined until the beginning of the following year, when the Society was offered the use of three rooms in the Royal Mews of Christiansborg (which had survived the fire) next door to the Court Theatre. Here it was allowed to remain for no less than sixty years until 1854, when the Court once again wished to use its premises for other purposes, offering in return a larger set of rooms in the north wing of Prinsens Palæ comprising an entrance hall, a committee room, and a large meeting room on the first floor, and on the floor above it a store room for unsold publications, a spacious archive, and an office for the Dictionary Committee (on which see Chapter IX). This formed the most convenient accommodation the Society had ever possessed and served as such until 1899, when at long last its many peregrinations came to an end with the move to the new, magnificent building which the Carlsberg Foundation had erected for itself and for the purposes of the Society at what is now No 35 H.C. Andersen's Boulevard (see Chapter XVI) and which has now been its home for almost a century.

Throughout these domiciliary changes the regular meetings have remained the life and soul of the Society. In his original proposal Hans Gram had envisaged that his antiquarian society would meet once a month, but at their first session the founding fathers decided to gather together every fortnight. Actually their energy and enthusiasm caused them to meet every week, a practice they resolved to pursue all the year round except in the summer, when one meeting every month was found to be sufficient. When the Society was reorganised after the great crisis in 1770, a Royal rescript dated 1774 October 5 stipulated that the ordinary meetings should be held every week from the beginning of November until the middle of May. With slight variations this period has since been the official "season" of the Society; but after some years it proved difficult to keep its activities going at this pace and in 1805 it was decided to meet only fortnightly, a tradition which has survived until the present when fourteen meetings are held from the middle of October until the beginning of May. Originally they were held on Tuesdays, but already in 1743 Monday became the ordinary day of the week for meetings. When Otto Thott succeeded Holstein as President in 1763, he changed the meeting day to Friday, on which day it remained for more than two centuries. Only in comparatively recent years has the gradual introduction of a five-day working week in almost all areas of public life made it inconvenient to meet just before the long week-end when many members would be absent. In consequence the meetings were tentatively moved to Thursdays, a change which now seems to have become permanent.

The old Royal Commission of Coins and Medals seems to have met in the afternoon. This was too early in the day for most members of the Society, who would be occupied all day with professional duties at the University or elsewhere. In consequence Holstein called the meetings at six in the afternoon when members would be free of other engagements, and terminated the sessions at seven so that they could be home for supper. In 1846 the first printed agenda and summons to a meeting invited the members to gather at six thirty and to begin their business precisely at the hour of seven. For unknown reasons this was changed to a quarter past seven in 1907, and this is still the point of time when the official meetings begin. When this last change was made, the meetings usually lasted a couple of hours. However, in 1899 the move to the new and spacious premises made it possible to introduce a significant innovation in the form of a common supper (at the expense of the Society) at the end of each session. This has made it customary for the members

attending the meeting to spend the whole evening together, the lectures and other formal business being relieved by a more convivial gathering at which views and news can be exchanged in informal conversations of perhaps equal importance for the intellectual prosperity of the Society.

From the very beginning it was the duty of the Secretary to record the transactions of the meetings into a book of minutes. The first volume covering the years from 1742 to 1770 was almost entirely written by Hielmstjerne, who faithfully attended almost all the meetings, but whose many other public duties often prevented him from entering more than a rather laconic statement of what had taken place. Becoming more remiss as the years went on, he entered nothing at all in the years 1764 to 1766, and later he often made his notes on loose scraps of paper from which they were copied into the Minute Book after his death. Nevertheless, this first volume of records clearly reveals both the nature of the work of the Society and how it went about it. First and foremost it gives an overwhelming illustration of the fact that although the Society was a free association of scholars, established for purposes of study and research, it was also very much a Royal Society doing business for an absolute monarch through the principal minister of the Crown.

This fact explains why it was often impossible to uphold the regular course of the meetings. They were called by Holstein and could not be held without his presence, except in a few cases when he was replaced by Count Thott. In consequence there were interruptions every time Holstein was absent from the city, travelling with the King in Holstein (1748, 1760 and 1767-68) or Norway (1749), when his other duties at Court prevented him from presiding, or when his private affairs became of overriding importance, as in 1747 when the meetings stopped for several months when the President first took a water cure and later was busy with weddings in the family. But the ordinary members might also be responsible for interruptions. In June 1757 a meeting was cancelled because no member had any communication to offer, and the same reason was given for a long interval in May and June 1770; in the latter

The first page of the first Book of Minutes, written by Henrichsen (Hielmstjerne) as Secretary. In translation the first passage reads: "On the 13th of November 1742 His Excellency Councillor Gram, Professor Pontoppidan and I came together in the House of His Excellency Privy Councillor von Holstein's house, where a proposal submitted by the Councillor for establishing a Societatem Antiquitat. et Historiar. Patriæ was read". (Archive of the Society).

1742 Novbr. 13.

(1.)

Den 13 Novembr. 1742 varen forsamlet i Gyens Excellens
 Hs. Gyensim Conferentsstua ved Holstems Gærst,
 i Gyens Excellens Hs. Justitsstua Gram, Prof. Pontoppidan
 og Eng, hvor det af Justitsraaden indgives Forslag
 om et Societets Antiquit. et Historiar. Patrie
 N^o 1 at oprette blis oplyst. Det befogtes af Excellence
 præliminært at give bekræftelse, at Hs. Majestæet
 givne Paa et nit fundant lænset Societæet blev
 oprettet og at Hs. Majestæet allværende jafte givne
 sin raadigste approbation ^{til} det af Justitsraad Gram
 indgives Forslag; som nsttes af Gyens Excellens og
 et befarværende omvælgte alle den blev forordnet
 i følgende Posten.

1 Post. i hvilken det blev i Forslaget allværende om
 et Societæet til et forsamlet Landmænds Antiquit.
 og Historier, som blev det fulde for det at den Reg
 til nogen visi bekræftelse allværende det ~~af~~ i et
 Societæet kunde tractere om alle Sciences og tractate
 i almindelighed om Landmænds Antiquitets og
 Historie at oplyse i samfundet. Det blev og ad intet
 indst at give det Societæet noget vist Navn.

case the true reason may have been the mounting political tension at the Court, as we shall see further on. In the course of time such irregularities became less frequent, the most serious being a suspension of the meetings in October and November 1807 in consequence of the British bombardment of the city on September 2-5 when the house of the Secretary Thomas Bugge and many possessions of the Society perished in the fire.

That the affairs of the King took precedence over all other matters is also evident from the procedure followed at the meetings where official business was always transacted first while scholarly matters were dealt with in the often brief time that was left. Sometimes this led to rather awkward consequences as in 1743-1744, when Hans Gram had to spread his reading of a paper on the connections between the Danish and the Anglo-Saxon languages over no less than thirteen consecutive sessions, perhaps not without making frequent appeals to the patience of his audience. That this routine was inconvenient must have been obvious to people who joined together as scholars, but not as administrators. However, no voice seems to have been raised against this routine for almost a century, and it was not abandoned until 1840, when it was decided to spend the first full hour of every session on the communications by the members; other business was to be transacted afterwards according to a preliminary announcement by the Secretary of questions of special importance. Although this new routine was tentative and adopted for one year only, it has since been the constant policy of the Society to give precedence to scholarly matters. That the change could be introduced in 1840 was no doubt connected with the fact that by then the role of the Society as a kind of unofficial government department had shrunk to almost nothing so that its business transactions mainly concerned its internal affairs.

Turning to the particular matters of business transacted by the Society we notice, firstly, that as a matter of course it had to continue the work of the Royal Commission of Coins and Medals, out of which it had emerged. In fact, something points to the conclusion that the King regarded the new Society as just a continuation of the old Commission under another name; at least many of his letters from 1743 and 1744 were addressed to "Our Commissioners of Coins and Medals", even when they were concerned with other affairs of the Society. Now the Commission had completed the re-organisation and classification of the collection in 1741; what remained was the task of composing and publishing an illustrated description of all those specimens that concerned

the history of the kings of Denmark and Norway. From the very beginning both the minutes and the correspondence of the Society reveal the great amount of time which the members devoted to this project which had to be carried out according to a plan devised in 1741 by the immigrant French engraver Jean-Blaise Desroches de Parthenay. The work met with many difficulties, good engravers were scarce, and the descriptions implied much historical research. There were also many specimens that did not illustrate dynastic history, and in 1745 Henrichsen proposed that they should be published by Langebek's "Little Society", an idea which Langebek turned down immediately. In the end the King took the project away from the Society, entrusting it in 1750 to Hielmstjerne (Henrichsen) in person. When he died in 1780, it was still unfinished; a new Royal Commission was established only one member of which belonged to the Society, so when the description finally appeared in 1791, it was in some ways a monument to the Society's failure to complete its first official task.

In the meantime the Society had also been concerned with the design of new medals commemorating notable events in the two kingdoms and in the Royal Family. Moreover, in 1743 the members were invited to come up with proposals for a series of smaller commemorative coins called jetons. This resulted in more than sixty suggestions reflecting many aspects of contemporary life, such as the founding of the new Royal Palace, the re-dedication of the Church of Our Lady after the Great Fire, the reform of the University, the decree on elementary schools, as well as the founding of the Commercial Bank and the East Asiatic Company. Other proposals reflected the spiritual climate in the reign of Christian VI, commemorating for instance decrees prohibiting the use of coarse language from the pulpit, the appearance of actors and jugglers at fairs and in markets, the strict observance of the sabbath (i.e. Sunday), and even the erection of new prisons. This quaint and uncongenial activity was last heard of at a meeting in 1758, at a time when the designing of new medals had already been transferred to the new *Royal Academy of Fine Arts* founded in 1754 on the basis of the previous School of Painting and Drawing from 1738. Everything considered, it was fortunate that such irrelevant duties were taken away from the Society, which in this field had acted as a mere instrument of the Crown. Since then the Society has only struck a few medals for its own purposes, beginning with a medal commemorating Hans Gram struck in the year of his death (1748), continuing with medals in memory of two former Presidents, J.L.Holstein (1766) and A.W.Hauch (1839), and

ending with a medal commemorating the centenary of the Society (1842) issued in gold to the King, in silver to princes of the blood, and in bronze to the members of the Society.

To a different category belong the gold and silver medals which the Society has since 1769 awarded to scholars in recognition of outstanding research or other scientific achievements. In the following we shall return to these special awards on several occasions.

The fact that the new Society grew out of the old Royal Commission had immediate consequences for the way in which it came to conduct its financial business. Unfortunately we are very badly informed about this part of its activity, at least with respect to the early years, since the first extant accounts date from the year 1779. Until this date the economic transactions of the Society can be followed only by way of more or less detailed entries in the minutes about expenses decided upon at the meetings, supplemented by a number of surviving Royal Letters granting money for specific purposes. In consequence the emerging picture leaves very much to be desired; however, it can be summarily described by saying that the Society simply took over the ordinary business of the Commission.

This implied, firstly, that an amount of 4000 Rbd. set aside for the project of a French publication of the Royal collection was transferred to the Society together with the profit gained by the sale of a number of redundant specimens. In this way the society acquired a fund of capital of its own which was by no means negligible, considering that the annual salary of a university professor was of the order of magnitude of 1000 Rbd. Secondly, the Society could dispose of an income stemming from a variety of sources, such as the interest on the capital, the profit on the sale of publications, and also on the sale of the jetons which the members had so diligently designed. If this was insufficient (as it usually was) one had to apply directly to the King for a special grant out of his "Particular Chest", — a fund controlled by the monarch in person and supplied with means derived from the customs, the sale of patents of nobility and other titles, and the fees paid by applicants for offices in Church and State.

On the expense side the most frequent items were for many years the sums paid to engravers for the copperplates used for illustrating the publications of the Society which sometimes also bought the paper on which these were printed. Otherwise the publications were no burden to the Society which in most cases made use of a commercial publisher who met the various costs of production. Other expenses were more directly



The Gold Medal of the Society as designed in 1769, probably by the painter Peter Cramer. On the obverse is a portrait of King Christian VII. The reverse has an allegorical representation of truth driving dark clouds away, surrounded by the inscription *VERITATI LUCIFERAE ALLECTAE* (To Truth summoned to bring Light). The modified stamp is from 1801, by P. Gianelli.

concerned with the promotion of scientific research. The first example of this kind seems to have been a grant obtained in December 1745 for medicaments to combat the already mentioned cattle disease which the new member B. J. de Buchwald was investigating. This was followed up by a Royal Rescript dated 1746 July 15, authorising the Society to spend 30 Rbd. on a microscope for Buchwald. This was the first of the many instances in which the Society has helped its members to acquire scientific equipment for specific research projects.

All this business was transacted according to an extremely simple procedure. The normative Royal Rescript of 1743 January 11 had decreed that Secretary Henrichsen keep the accounts which must be completed at the end of the year and revised by two of the members before being discharged by all the members present. Thus the secretary was also *ex officio* the treasurer of the Society. Although Henrichsen's accounts disappeared with the dissolution of his estate, the records show that he discharged himself of this duty with great care until his death when a more formalised procedure was introduced.

King Christian VI had other tasks in store for the Society than the taking care of his coins and medals. It was also he who initiated that

topographical activity which became in the course of time one of its most remarkable achievements. From May to September 1733 the king had made a stately progress through Norway, and the journey had been described almost at once in a sumptuous manuscript (by an unknown artist) illustrated by 68 water-colours of landscapes and maps. In 1740 (if not before) Holstein was ordered to produce a printed edition of the work with copperplate illustrations, a task in which the Society became involved from the very first day of its existence, after which the project was on the agenda of most meetings for the next six years. However, once again the result was a failure, firstly because of the poor quality of the first engravings, and next because the new King Frederik V was reluctant to provide the financial means for printing a work which would never get a large sale. Attempts to find a publisher who was willing to run the risk of investing in the project were of no avail, and in 1748 it was finally abandoned.

Having become responsible for this undertaking, the Society tried to acquire more material about Norway, petitioning the King in March 1744 that a large collection of maps and drawings belonging to the estate of a former governor of Trondheim, Abraham Dreyer (1671-1735), might be given into the care of the Society for further use in its topographical work. The King made a favourable reply; but nothing more was heard about this initiative which seems to have petered out almost immediately. Later the Society was only occasionally involved in Norwegian topography; the record of two meetings in 1753 and 1763 respectively show that it kept an eye upon the cartographical work done in Norway by Christopher Hammer who in 1766 obtained a Royal Privilege to publish maps of Norway for the following twenty years. This put a stop to any desires the Society might have had to pursue this line of research.

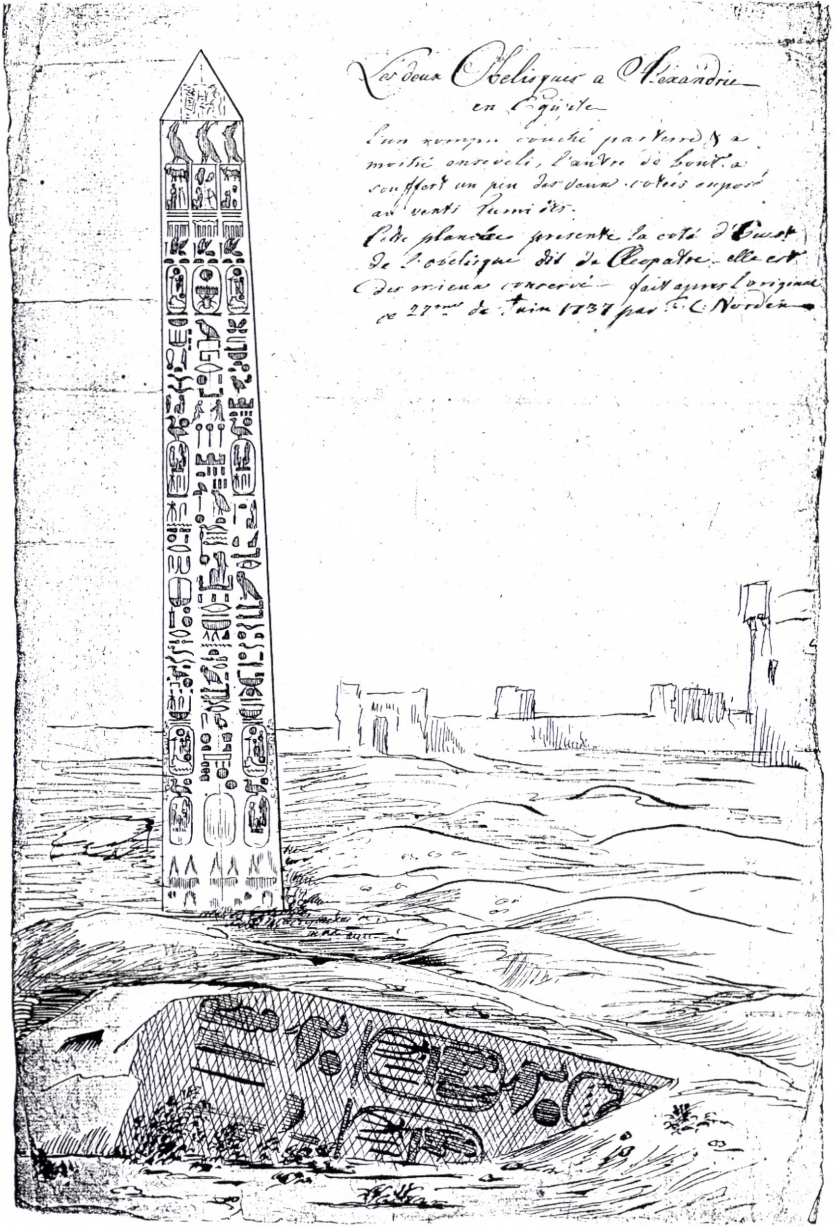
While this first attempt to promote topographical knowledge miscarried the next one was an unqualified success. It concerned a very different part of the world, far from the possessions of the King, but no less than Norway in many respects a blind spot on the map of the world. In 1737-1738 the Naval Captain Frederik Ludvig Norden (1708-1742) had visited Egypt on a scientific expedition sponsored by the King. It had provided a wealth of important results among which was the first reliable map of the course of the Nile which Norden had followed from the delta almost to the second cataract, supplemented by drawings of temples and pyramids and copies of hieroglyphic inscriptions, besides much ethnographical material concerning the present population, every-

thing painstakingly recorded in Norden's travel diary. On his return the king asked him to write a connected account of the journey, a task which Norden had almost completed at the time of his premature death in 1742. His manuscript was left to the First Lord of the Admiralty who gave it to the King who again immediately resolved that it should be published, ordering Holstein to take the matter in hand. After the death of Christian VI his successor Frederik V decided that the Society should assume responsibility for the publication, and at the same time he himself refused to give it financial support. Once again it proved impossible to find a publisher. In consequence Hielmstjerne proposed the bold idea that the Society itself should publish the work, offering at the same time to pay a possible deficit out of his own pocket while the income from the sale should go to the Society.

This generous offer clinched the matter, and soon the work was in rapid progress. A French translation was provided by the Royal Librarian Bernhard Møllmann (who was among the first members of the Society) and revised by the engraver de Parthenay, paper was bought, and in the autumn of 1750 the first volume of the *Voyage de l'Égypte et de Nubie, par Mr. Frederik Louis Norden, Capitaine des vaisseaux du Roi*, appeared from the press of the Royal Orphanage in Copenhagen. A second volume was somewhat delayed because of Møllmann's other duties, but appeared eventually in 1755.

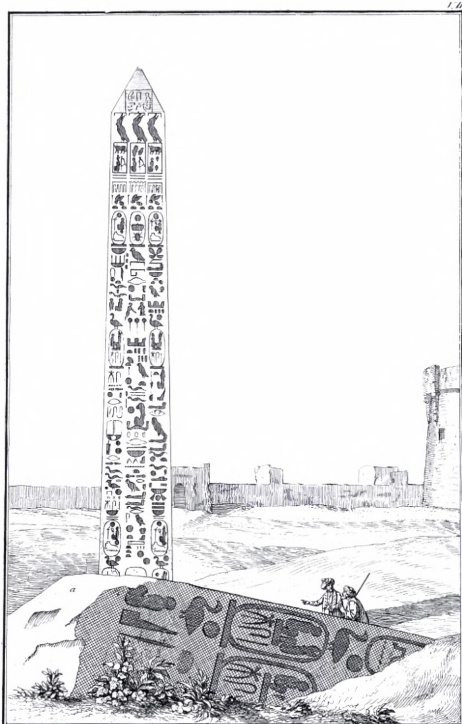
The publication of these two stately folios was a truly remarkable achievement. It had absorbed most of the energy of the Society for several years, and much care had been given to both the editing and translation of the text, to the 150 excellent plates engraved by Carl Marcus Tuscher (1705-1751), and to the clear and handsome typography. Appearing in a major language, the work was at once favourably received all over Europe. It certainly contributed more than anything else to draw attention to the new Society, which thus entered the international arena with a flourish that was both noticed and admired, in particular because the scientific value of Norden's work came fully up to the high standard of its production. In consequence the Society was suddenly raised from obscurity to an acknowledged status among the academic associations of Europe. Strangely enough, it itself seems to have been unaware of the future potential of its product. At least the copperplates were sold to an English bookseller with the result that all later editions appeared in other countries with no profit for the Society.

Already while the Society was at work on the publication of Captain Norden's Egyptian voyage, it became directly involved in a new project



Left: Original drawing by Captain F. L. Norden, Alexandria 27 June 1737, showing two obelisks, also called "Cleopatra's Needles". Orig. 275 mm broad. Archives of the Society.

Above: Etching by Carl Marcus Tuscher after Norden's drawing. The lower part of the erect obelisk has been hidden by the fallen one, and part of the inscription, including the names of kings, cannot be seen. Two persons passing the fallen obelisk have been added to the engraver. Orig. 230 mm broad.



*Obelisque, dit de Cleopatre, a Alexandrie, vu du côté de l'ouest, qui est le mieux conservé.
à Obelisque cassé, et couché par terre, à moitié enseveli.*

of exploration of one of the most distant and least known among the King's possessions. In the later Middle Ages the old republic of Iceland had come under Norwegian sovereignty so that it came under the Danish Crown when the kingdoms of Denmark and Norway were united in 1380. It had a large territory of more than twice the size of Denmark, but presumably with no more inhabitants than Copenhagen. Situated a thousand miles from the capital and with no university of its own, it was easily neglected. Yet it was the home of a glorious cultural tradition, the literary remains of which were now largely located in the great collection of books and manuscripts which Arni Magnússon had donated to the University Library of Copenhagen while at the same time endowing a number of scholarships for students from Iceland. However, the topography of the island was badly known, the most recent description being published in German in 1746 by a previous mayor of Hamburg, Johan

Anderson (1674-1743), who had never visited the country, but relied on dubious secondary sources for his information. When this work appeared in a Danish translation in 1748, it was obvious that something had to be done, and the government decided upon a number of measures to redress the situation.

Firstly, in 1749 it instructed the former High Court official Niels Horrebow (1712-1760), – a son of the astronomer, but not a member of the Society himself – to travel through Iceland and report on the geographical, physical, and economic conditions on the island. In this project the Society as such was not involved, although some of Horrebow's interim reports were read at meetings in 1750. But in the following year the project was changed by King Frederik V, who ordered the Society to recall Horrebow and in his place to send two Icelandic students in Copenhagen to Iceland on a new expedition with salaries and expenses for equipment and instruments paid by for the King. The two students were Eggert Ólafsson (1726-1768) and Bjarni Pálsson (1719-1779), both of them Arni Magnússon scholars, the former being well acquainted with Icelandic history and the latter a good naturalist. They spent a year in preparing their expedition before they set sail for Iceland in the summer of 1752.

In the meantime Horrebow had prepared an account of his own research on the island. It included a new map, meteorological observations for two years, and a general description of the customs and institutions of the population. Two members of the Society, Stampe and Luxdorph, were ordered to examine the manuscript, from which they deleted some of the more outspoken criticisms of Anderson's work, and, "for the sake of decency", also a number of passages on the manners and habits of the inhabitants. With these omissions the book appeared anonymously in 1752 without further assistance by the Society. It was very well received and before long a series of translations into German, Dutch, English and French showed how it was appreciated in other countries.

Ólafsson and Pálsson stayed in Iceland until 1757. During these five years the Society received frequent reports of their activity together with herbals and other natural specimens. Detailed instructions went the other way, and the Society spent some of its own funds on supplementing the insufficient economic means granted by the government. On their return the two students asked the Society for instructions on how to proceed with the material they had brought back. It was decided to place their collections in the care of the University, and to ask them to prepare

a detailed description of all their observations. This proved to be a difficult undertaking, in particular since Pálsson left the project in 1760 when he was promoted to a newly created post as the first fully educated medical officer of his home country. But Ólafsson carried on alone until he too got his reward, being made one of the vicegovernors of the island, for which he left in 1767, only to die together with his wife in a drowning accident in the following year. Before his departure he had left his final report to the Society in the form of an impressive manuscript of 736 pages in-folio, illustrated with many watercolours and drawings. Here each of the seven regions of the island was carefully described with respect to the landscape, geology, economy, inhabitants, animal life, and particulars of curious features. After some editing it was finally published at Sorø in 1772, in two stately quartos provided with 51 plates made from Ólafsson's illustrations and with an excellent map of the island. The cost of printing the 550 copies was covered by about 300 subscriptions, which Hielmstjerne had been able to obtain in advance. This work, too, appeared later in German, French, and English translations and remained for many years the standard work on contemporary Iceland.

The successful completion of this undertaking was not only a valuable contribution to the knowledge of the Northern World. It also gave a significant proof that the Society was able to assume responsibility for a long-term scientific project. As such it was in many ways the precursor of the much more ambitious plan of making a complete topographical survey of the kingdom of Denmark, which was proposed almost as soon as the Icelandic expedition was finished. But this project was of a different order of magnitude, keeping the Society busy for many decades, and therefore worth describing in a separate chapter.

CHAPTER V

The Regular Publications

The problem of the dissemination of newly acquired knowledge has a long and complicated history. When the universities emerged in the Middle Ages, it was solved by wandering scholars travelling from place to place endowed with a *jus ubique docendi* that enabled them to teach everywhere, bringing with them new ideas and new books. This practice was gradually abandoned with the establishing of permanent professorships and with the loss of the *jus ubique docendi* after the Reformation, when religious conformity was everywhere required. Now intellectual communication across the national and ecclesiastical frontiers would depend more and more on the printed book, which appeared in the latter half of the 15th century as a new vehicle for outdated traditional lore as well as for the increasing body of new knowledge that marked the period of the Renaissance. Soon the specialized monograph appeared as a new literary genre which both the Humanists and the scientific pioneers quickly learned to utilise.

However, the production of a printed book was both a costly and slow affair, and scholarly intercourse was more easily promoted by personal letters, often shaped as research papers or small treatises and sometimes written with an eye to their being copied by the recipient and sent to other colleagues or friends. Large collections of such letters might also appear in print; thus in 1596 Tycho Brahe published his *Libri Epistolarum Astronomicarum* at his own press on the island of Hven, an important book that enabled scientists everywhere to become acquainted with the many problems which Tycho had over the years discussed with Christoph Rothmann at Kassel and other astronomers.

In this way information on new discoveries was made available to all and sundry within the learned republic, but with an inevitable delay which must have caused more than one scholar to speculate about the possibility of having his contributions printed and distributed as soon as they were ready. Nevertheless, it took a surprisingly long time before the first scholarly periodicals began to appear, perhaps because the launching of a specialised journal implied a considerable outlay of capital which only wealthy individuals or corporate bodies would be able to provide.

In fact, the beginning was not made until 1665, when a private scholar in Paris started the *Journal des Sçavans*. This periodical was soon emulated in other countries, where both the *Giornale dei Letterati* in Rome (1668) and the *Acta Eruditorum* in Leipzig (1682) began as private enterprises.

The great learned societies also soon realised that a publication appearing at regular intervals would be the ideal solution to the problem of how to make the contributions of their members known before they were out of date. Already a couple of months after the launching of the French Journal, the Royal Society of London issued the first number of its famous (and still running) *Philosophical Transactions* (1665). In France the *Journal* made the need of a similar periodical less obvious; but after its reorganisation in 1699 the Académie Royale des Sciences started a regular series of *Mémoires*, accompanied by an annual *Histoire* of its proceedings. These publications appeared in the vernacular language of their respective countries, whereas the *Miscellanea Berolinensis* (and several others) appealed to a wider audience by appearing in Latin from its foundation in 1710, until in 1746 it changed to French at the request of King Frederick the Great. The *Commentarii* of the Academy of St. Petersburg (1726) were also published in Latin and French.

In Denmark, and in the Nordic countries in general, the first harbinger of this movement was the five volumes of the *Acta Medica Hafniensis*, which Thomas Bartholin edited from 1673 until his death in 1680. It kept a high scientific standard with a number of important research papers in anatomy by the editor himself and by his even more famous pupil Niels Stensen, or Steno (1638-1686); it was also handsomely adorned by a series of excellent copperplate illustrations. But it did not survive its founder, and in Denmark there was no other attempt to found a scientific periodical until the Copenhagen Society took the matter in hand, being forestalled by a few years by the *Acta Literaria Sueciae*, published by the Swedish Academy.

From the very beginning the founders of the Society took it for granted that it should publish the "communications" or "specimens" of its members; but this presupposed that several decisive problems had been solved. First and foremost there was no freedom of the press. Before the Reformation a book could not be printed without the permission of a bishop. This practice survived and was confirmed by the Ecclesiastical Ordinance of 1539, which regulated the affairs of the established Lutheran Church. Under the absolute monarchy it was enforced by a special statute (1667) as one of the principal means of controlling public opinion by preventing religious or political dissidents

from publishing their views. Now it went without saying that this kind of official censorship might seriously hamper the activity of a learned society, and already in his first proposal for a *Collegium Antiquitatis* Hans Gram claimed the necessity of being allowed “freely to print that which is elaborated and found worthy of being brought to light” [Lomh. I, 12].

At this time this claim was novel and bold in the extreme, and Gram realised that some kind of censorship was inevitable. But wishing to keep it within the pale of the Society itself, he proposed that it should appoint two of its members to examine the papers read at the meetings, submitting their judgment to the President, who would then make the final decision. This procedure met with general agreement and was silently approved in the Royal Rescript of 1743 January 11, which permitted the Society as such after the manner of other societies to publish in print certain collections of its own works together with other pieces which were deemed worthy of being presented to the public [Lomh. I, 25]. Here there was no mention of official censorship, with the result that the Society has ever since been able to direct its own publications without interference from the outside.

Another important matter was the language of the publications. At the meetings practically all the “communications” were read in Danish. But if this small language was adopted, the new journal would appeal only to a rather limited circle of scholars in the Scandinavian countries. This might easily jeopardize the economy of the project and also contribute to the intellectual isolation of this whole region of Europe. The question was discussed in a private memorandum on the general work of the Society, presumably written by Gram at the request of Holstein. It contained among other things a detailed plan of the *Acta*, as the publication is called here: Each volume was to contain a list of members, biographies of deceased members, and a historical account of the life of the Society year by year, followed by the approved papers, and ending with a section of book reviews. This was accompanied by some sensible admonitions to the authors who must express themselves as briefly as possible, “presenting only the new information they wished to impart, without also exposing much else that is already sufficiently known” [Lomh. I, 93]. Finally the author tackles the question of the language, being seemingly aware that his fellow members wished it to be Danish. Nevertheless he maintained that the “*Acta Societatis* must be printed in Latin even if the “specimens” had been read in Danish, for it cannot be assumed that they can be sold (if they are) in Danish” [ibid.]. But he kept a door open for the view of the majority by suggesting that one

might try a single volume in Danish in order to see if the public would prefer that.

The problems of publication came up at a meeting 1742 December 4, where it was decided that "the writings and pieces produced by the members of this Collegium may, – when they are one day going to be printed – be placed Pele Mele amongst each other, as in the *Acta Literaria Sueciae* and *Berolinensis*, and in the *Mémoires de Trévoux*" [Lomh. I, 22] the latter being a monthly periodical directed by a group of French Jesuits and running from 1701 to 1757. But as far as one can see, no decision was taken with respect to the language; perhaps this question was too delicate, given the fact that the President was a Danish civil servant with strong national feelings, while Gram was a scholar of European renown and no doubt eager to present the work of his fellow members to an international public in a language with which the world of learning was familiar everywhere.

Being responsible for the daily work of the Society, the Secretary would also assume the task of editing the new publication, and in the following years Henrichsen was collecting material for the first volume. In 1744 he had such a number of contributions that on June 3 he proposed publishing the first volume on Michelmas Day, and also "that the pieces must appear in Danish only". This latter proposal met with no opposition from Gram, whereas the tight time schedule proved to be too optimistic. In fact the first volume did not appear until the following year. It was published by the Royal Orphanage, which possessed one of the best presses in the country, directed from 1737 to 1757 by the very competent printer Gottmann Friedrich Kisel, who had already produced the three magnificent volumes of the *Cimbria Literata* for the Society (1744). The volume was a quarto of 396 pages containing nine numbered articles, a list of the eight members of the Society, and an anonymous preface, charmingly written by Hans Gram and dated 1745 July 8. As usual with publications in the vernacular in Northern and Central Europe, the book was printed in *Fraktur*, although with Latin and other foreign words in Roman letters. But the script was not overburdened with ornamental details, and even if there were 36 lines and about 2500 typographical units to the page, the composition was clear, and the text reads easily. Everything considered, this first volume was a good testimony to the high standard of the Orphanage Press.

A look at the title page reveals that by now the Society had had to make two decisions that could no longer be postponed. One of them concerned the title of the volume. Well known academic terms like *Acta*,

Mémoires, Transactions or *Miscellanies* would have a foreign ring in a Danish publication. In consequence it was decided to use the Danish title of *Skrifter*, which simply means “writings”. The other problem was what the Society would call itself. It still had no official name and was not yet clearly separated from the Commission on Coins and Medals. The decisive letter from the King 1743 Januar 11 was still addressed to the members of the old commission. In another letter from the same year the King spoke in poor Latin of his *Collegio Scientiarum*, while several letters from the following year used the hybrid form “Videnskabernes Societet”, (The Society of Sciences). This was not done into Danish until 1764 August 10, when the name of “Videnskabernes Selskab” appears for the first time. However, for their first official publication the members adopted the more baroque name of “Det Kiøbenhavnske Selskab af Lærdoms og Videnskabers Elskere” (The Copenhagen Society of Lovers of Learning and Sciences), so that the full title of the first volume became the long and involved *Skrifter, som udi det Kiøbenhavnske Selskab af Lærdoms og Videnskabers Elskere ere fremlagte og oplæste i Aarene 1743 og 1744* (Writings that were submitted and read to the Copenhagen Society of Lovers of Learning and Science in the years 1743 and 1744). Until 1770 the first ten volumes appeared under this clumsy, but precise heading.

Hans Gram’s preface is of considerable interest as the first manifesto by which the Society introduced itself to the general public. Beginning by admitting that the learned world has done much useful work without the assistance of learned societies, Gram maintains that this situation has changed over the past two centuries. Without the new academies, their meetings and publications, “no mean part of what is now known (...) would have been stuck in the heads and studies of the discoverers without being conveyed to others” [Writings I, Preface, 2v]. In Denmark it is enough to recall how many different disciplines were furthered by Bartholin’s *Acta Medica*, which did not confine itself to medicine, but also published papers on natural science, and even a few on mathematics and language. Since this publication was so short-lived, one may hope that the new Society of a few Lovers of Learning formed by Privy Councillor Holstein “may gain a favourable reputation, not only among their equals and all students, but also among people belonging to the highest as well as the lowest circles in the Fatherland” [ibid, 3r]. To serve this purpose the Society now publishes a volume of contributions read by its members. But this first volume is different from the *Acta Medica* in two particular respects.

Skrifter,
som udi
det Kiøbenhavnſke
Selskab
af
Lærdoms og Videnskabers Giftere
ere
fremlagte og oplæste
i Aarene 1743 og 1744.
Førſte Deel.

KJØBENHAVN,
Udi det Kongelig Wåſſenhuſes Bogtrykkerie
og paa dets Forlag.
Trykt af Gottmann Friderich Kiſel. Aar 1745.



Title page of the first volume of the Society's Skrifter.

Firstly, it contains only papers concerned with history. But this is only a consequence of the particular fields of interest of the first members of the Society and should not be taken as an indication of the future course

of the Writings. On the contrary, medical, physical, and mathematical contributions will also be welcomed, and that not only by experts, but also by other people who are gifted in any kind of science or the fine arts. Excluded are only the theologians, unless they work in philology, Biblical criticism, or ecclesiastical history.

This was a programmatic statement intended to give the publication as broad a basis as possible. It not only agreed with the decision, or indeed the Royal command, to extend the membership of the Society to all disciplines. It also announced that the Writings would be open to non-members. Since the preface was anonymous, these guidelines must have been the agreed opinion of the members, although we do not know at which meeting they were adopted. They have in fact been respected ever since, even the clause about the theologians. Over the years the Society has admitted many members of the faculties of theology, but always in accordance with the criteria stated by Gram. But no doubt it would be wrong to construe the restriction as a measure of discrimination; it only aimed at preventing the Society from discussing questions that were pure matters of faith. In this attitude it agreed with most other academies in Europe.

Given this limitation on the subject matter Gram gives a very free rein to the future contributors, assuring them that “with respect to the manner of treatment (...) it has been agreed that this must be left to everyone’s free choice, and that all are allowed to adjust themselves to the subject matter as they find it best and in harmony with their purpose, time, and other circumstances. So that if a rich treatise shall always be welcome even if it be longer than usual, so shall also another one of a single page only be as dear to the Society as if it were written on many sheets of paper, if only it contains something that is unusual, useful, or worth noting” [ibid. 4r]. This stipulation is the first statement of the invariable policy of the Society of never publishing anything which has been printed before.

Finally Gram has a brief remark on the language of publication. “Since from the beginning the idea was not that this work should aim at more than the information and entertainment (sic) of our own citizens since it concerns domestic matters [only], we have found no reason for using another language than our own, and this all the more so since we have so many foreign examples to follow” [ibid. 4v]. Gram’s loyalty to the Society did not fail him here; there is no hint that the decision to publish in Danish for a limited public only was against his own opinion of the role of a journal which he had wished to integrate into the life of

the learned world as a whole. Several years later (1759) the mathematician Chresten Hee forcefully expressed the prevailing opinion that all the business of the Society must be conducted in Danish "in order to promote science within the Danish nation, but not to make it shine among foreigners. Therefore the Society should never undertake any translations of its acts; for if they are worth anything, they will no doubt be translated by others like the Swedish ones." [Lomh. I, 104].

Actually such translations had already appeared. As soon as the first volume came out, the publisher started (perhaps inspired by Gram) a series of parallel versions of the "Writings" in a Latin translation. Two further volumes followed in 1746 and 1747, but after Gram's death this practice was discontinued. Much later a series of eight volumes of historical papers selected from the *Writings* appeared at Kiel in German translation (1782-1799). German versions of some of the scientific papers were also published in Copenhagen 1798-1799 and again in 1801-1805. After this date no such translations were published, and in the 19th century the language problem entered into a new phase, as we shall see in a later chapter.

According to Gram's original concept the *Writings* were to be the ordinary vehicle for the "contributions" that were read and approved at the meetings of the Society. With the exception of the President and Secretary, all the first members did in fact contribute to the first volume, some of them more than one paper, with the result that there were nine articles by six different authors. This unreserved cooperation set a very strong example and almost established an unwritten law that each and every member of the Society ought to contribute to its publications. A perusal of the following volumes reveals that newly elected members, too, usually fulfilled this moral obligation. Thus the second volume was written by the same authors as the first (with the exception of Ramus), joined by two of the new members elected in 1745, viz. Buchwald and Detharding from the faculty of medicine. The third new member, the philosopher Henrik Stampe, made an exception to the rule by never publishing anything at all in the *Writings*. It seems that honorary members were not expected to contribute; they were usually not scholars and rarely attended the meetings. Nevertheless, being a scholar, Ludvig Holberg acknowledged his election to honorary membership by contributing papers to both the first and the second volume. But this did not create any precedence.

All the founding fathers of the society published more than one paper, Gram reaching a total of no less than 16 contributions. But most

of the later members submitted only a single paper each, usually based on their maiden speech at the first meeting they attended. This explains the fact that for many years practically all the authors were residents of the capital, whereas most of the scholars living in Norway contributed only rarely or not at all, being unable to attend a meeting to have their papers discussed and approved. This was the case also with German-speaking members living in Altona and Kiel or elsewhere who had, of course, also linguistic reasons to stay away from a purely Danish publication. An exception to this rule was a numismatical treatise submitted by J. C. H. Dreyer at Lübeck in 1759 and printed in Volume VIII (1760).

Already in its early years the Society began to receive unsolicited papers from non-members. We have already mentioned the long treatise on theoretical mechanics submitted by Jens Kraft to Gram in 1746 and read to the members by Stampe. It resulted in the election of its author and was duly printed in Vol. III of the Writings. Less fortunate was the author of a paper on the quadrature of the circle, submitted in 1751 as the first of the unending flow of similar contributions from naive amateur mathematicians or even crackpots with whom the Society has had to cope until the present. Of a different nature were a number of reports on natural phenomena sent in from observers in distant parts of the realm, such as the very detailed weather observations made by the governor of Lapponia (Hammer) and submitted in 1759 and 1762, and a similar series received in 1765 from the headmaster (Arentz) of the cathedral school of Bergen; the latter was elected in 1775; but despite their obvious importance for meteorology and navigation neither of these contributions was published, and they have to be consulted in the archives of the Society. A better fate befell a meteorological diary from Trondheim 1759 to 1761 of which extracts appeared in Volume IX (1765). Astronomical observations seem to have been more appreciated. At least Volume IX also contains a report on an observation of the (alleged) satellite of Venus by P. Roedkiær, followed by an observation of the solar eclipse 1764 April 1 made in Ditmarsken by an otherwise unknown Mr. Remmers. The latter contribution was provided with an introductory note stating that "the Royal Society of Science gladly welcomes observations, which may be submitted by competent observers" [IX, 611]. But despite this invitation such contributions remained rare. Obviously the Society had not yet succeeded in capturing the attention of all scientific circles in the two kingdoms.

This failure was also reflected in other ways. After the two first volumes of the Writings had been on the market for some time it proved

that they sold badly, and in January 1747 it was discussed whether or not to stop the publication altogether. Fortunately it was decided to continue, and Volume III duly appeared later in the same year. Then it was found expedient to make a pause, and Volume IV did not appear until 1750. It was a kind of memorial to Hans Gram, who had died in 1748, containing only papers which this industrious scholar had left behind. Two more were published in Volume V (1751). From then on it proved impossible to obtain sufficient material for an annual publication. In consequence, the following volumes appeared at irregular intervals of three to five years until Volume X (1770), when a long delay was caused by the crisis in the life of the Society which we shall consider in the next chapter.

Turning now from the authors to the contents of the Writings, it is no surprise that the papers reflected the personal interests of the members. At the beginning they were all antiquarians or historians with the sole exception of Ramus. Among the nine contributions to the first volume three dealt with historical or antiquarian topics of national interest. Gram published his own answer to the question he had posed at one of the very first meetings in 1742 about the year of King Canute's journey to Rome. Møllmann wrote on the genealogy of Archbishop Eskil of Lund (d. 1181), and Scheid devoted 110 pages to a rebuttal of the old contention that Denmark had at one time been a fief under Germany. Two other papers belonged to the history of philology. In one of them Pontoppidan considered the fate of the Danish language in the Duchy of Schleswig where the German influence was strong, while Wøldike examined the Danish translation of the Pentateuch made by the Reformer Hans Tausen (d. 1561). Archaeology was represented by a brief report by Pontoppidan on a recently (1744) found megalithic tomb in the north of Sealand, while Wøldike showed his familiarity with Jewish studies in a paper on a medal with a Hebrew inscription. In his second paper Gram moved into the history of technology with 110 pages on the invention of gunpowder, while Ramus dealt with the northern lights in a way that was more historical than meteorological. Everything considered, the nine papers revealed that historical scholarship in Denmark was active in a remarkable variety of fields.

In the second volume (1746), too, most of the space was given to historical contributions from the authors of Volume I with the exception of Ramus; but now also the first scientific treatises began to appear in the form of three small papers on the cattle disease; one of them was written by Holberg, as already mentioned, the two others by the newly

elected medical professors. This volume was completed by an excellent general index of 20 pages covering both Volumes I and II. Similar indices are found also in most of the later volumes. In Volume III scientific topics are even more conspicuous. Here the most impressive item is Jens Kraft's great treatise on theoretical mechanics; but Gram also demonstrated the variety of his interests by a paper "On the artistry of nature in reproducing certain objects as pictures on frozen windows," while Holberg's second (and last) contribution was a sketch of the early naval history of Denmark and Norway, — an elegantly written essay unencumbered by references to the historical sources, but strong in the moral denunciation of the vikings as greedy and unscrupulous pirates.

Without going into details with the following volumes, it is not difficult to discover a general trend in the distribution of papers among the humanistic and the scientific writers. The following diagram shows the numbers of contributions from the two classes, separated by the vertical line, in the first twelve volumes. A similar diagram showing the number of pages devoted to the two groups would look somewhat different since the scientific contributions tend to be the shorter.

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Nevertheless, over the years the tendency is unmistakable. The scientific contributions are in the ascendant. In the first eight volumes the humanities still more or less hold their own; but beginning with Vol. IX the balance is disturbed. There are now more than twice as many papers on scientific as on humanistic topics, and this ratio increases in the two final volumes of this first series. This ratio even increases towards the end of the century. The five volumes of the second series appearing from 1781 to 1799 contain a total of 170 contributions to science as against only 16 papers with humanistic subject matters.

There is no obvious explanation of this remarkable tendency. It does not reflect the composition of the membership of the Society; for among a total of 108 ordinary members elected in the 18th century there were 37 humanistic scholars and 47 scientists and medical doctors from whom contributions could be expected. Thus there were actually more scientists than humanists, but not two or three times as many as the figures would indicate.

It would also be wrong to suppose that Danish science was in a particularly flourishing state while the humanities were languishing or on the decline. In this period Danish science could muster only very few representatives of the first rank, such as the entomologist Johan Christian Fabricius (1745-1808, elected 1775) and the zoologist Otto Fried-

	Humanistic papers	Science papers
XII 1779	* * * *	* * * * * * * * * * * * * * * * * * * *
XI 1777	* * *	* * * * * * * * *
X 1770	* * * * * * * *	* * * * * * * * * * * * * * * * *
IX 1765	* * * * * *	* * * * * * * * * * * * * * * * *
VIII 1760	* * * * * * * *	* * * * *
VII 1758	* * * * * *	* * * * *
VI 1754	* * * * * *	* * * * * *
V 1751	* * *	* * * * * *
IV 1750	* * * *	
III 1747	* * * * * *	* * *
II 1746	* * * * * * * * * * *	* * *
I 1745	* * * * * * * * *	*

rich Müller (1730-1784, elected 1775). Mathematics was at a very low ebb, physics a poor relation of medicine, and the only competent astronomer Thomas Bugge (1740-1815, elected 1775) was kept busy with the great cartographical survey of the country. On the other side of the divide historians and antiquarians like Langebek and Peter Frederik Suhm (1728-1798, elected 1758) were among the best and most industrious the country had ever had. Suhm's History of Denmark (to AD 1400), in 14 volumes totalling 15,000 pages actually remains the most copious historical work ever written by a single Danish author.

Now it is true that the Society was not the only forum for the humanities. There was also Langebek's "Little Society" which many members of the Society entered; but this did not affect their publishing activity since Langebek's journal, the *Danske Magazin*, came to a stop in 1752 and was revived only in 1794. In consequence the Writings were the only Danish periodical available to humanistic scholars through practically all of the latter half of the century. And since they published so little here the only conclusion must be that their great industry found outlets elsewhere. Many of them were in fact absorbed by studies the results of which could not be accommodated within the Writings. Generally speaking they were mainly concerned with a huge project of surveying, collecting and publishing all the source material for Danish history. Langebek himself had shown the way by his pioneer work on the Medieval sources and published himself the three first folios of the *Scriptores Rerum Danicarum* (1772-1774) before his death, while the remaining six tomes were produced 1776-1834 by his collaborators and disciples. Similarly, intense preparations were made for a complete Danish *Diplomatarium* of official letters, a project which Gram had handed over to Langebek who collected or copied thousands of letters that were later deposited in the Royal Library, awaiting the publication of the definitive *Diplomatarium Danicum*.

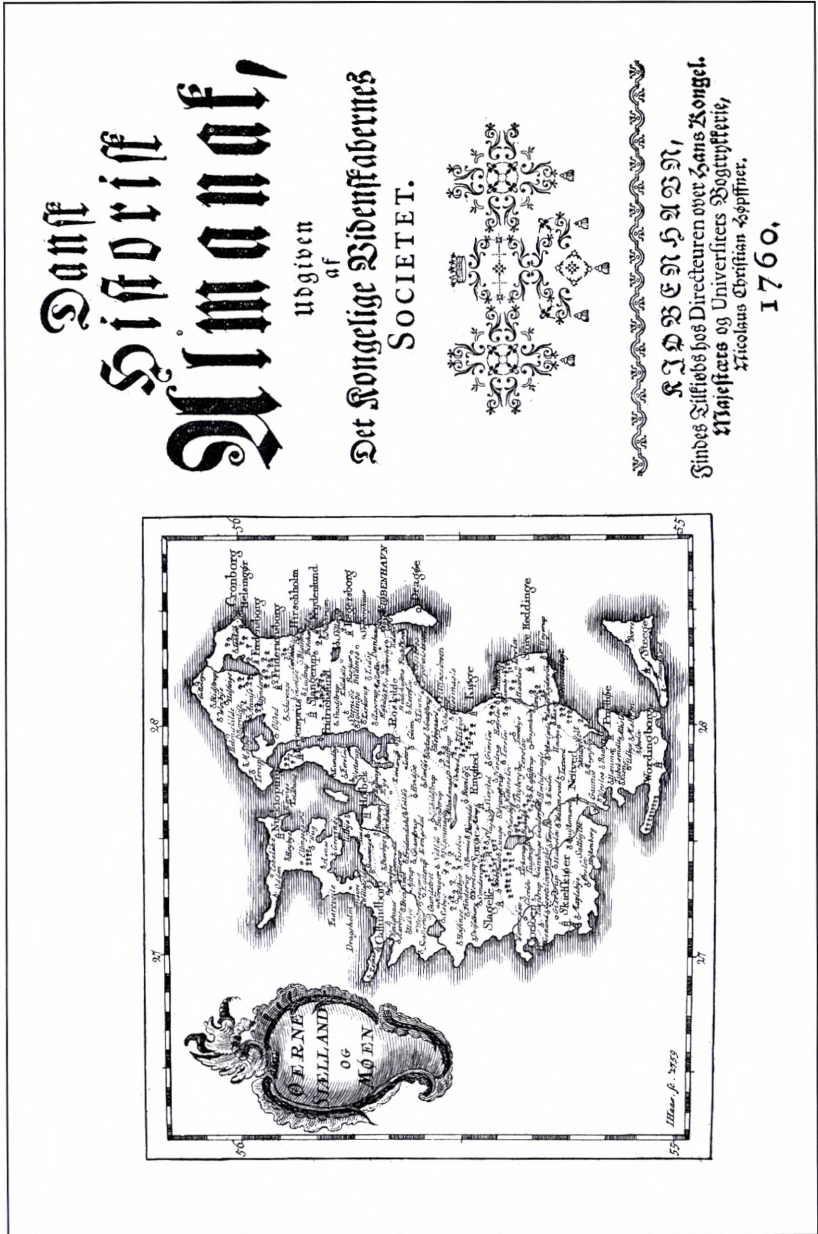
The question of the extent to which the Writings contributed to the advancement of knowledge cannot be answered in a few lines. The papers were in Danish, only a few of them appeared in translation or were put to the test of international criticism. Moreover, some of them were clearly designed for domestic use, presenting much that was new at home but well known in other countries. This was the case with Jens Kraft's long article on Newtonian mechanics (Vol. III), in which he tried to persuade scientists like Horrebow or Ramus that the bleak Cartesian tradition in physics had outlived itself, with the unspoken implication that it was necessary to change horses if science in Denmark was not to

be a petrified relict. This serious memento was followed up later in two shorter papers, in the theory of matter and on the human soul, in which Cartesian doctrines were attacked from a philosophical point of view (vol. IV).

For such purposes the Danish language of the publications was an adequate vehicle; but other contributions would have deserved a much wider public. This was true of e.g. Kraft's research papers in pure mathematics (on the solution of equations by expansion in series, Vol. V) which would have had a better fate if they had appeared in Latin or another major language. This also applies to an interesting treatise on technical mechanics called *On the Art of Living under Water* (Vol. VIII), in which Christen Hee gave a strict, mathematical form to a qualitative theory of the diving bell which Edmund Halley had published in 1716 in a paper with the same title in the *Philosophical Transactions* (Vol. 29). An international public would also have profited from the many brief reports on eclipses and other astronomical events, or from the increasing number of papers describing the fauna and flora of the two kingdoms; they began with a *Description of Ten Norwegian Insects* submitted by the Norwegian parish priest Hans Strøm (Vol. IX and X) and followed by a *Description of Ten Norwegian Freshwater Plants* (Vol. X). The accompanying copperplates were the first illustrations of natural objects appearing in the Writings.

When we turn to the humanities, it is rather obvious that many of the historical papers were important contributions to both the profane and the ecclesiastical history of Denmark, Norway, and Iceland. Here Holberg's cavalier treatment of the naval history of the viking age was by no means typical. On the contrary, all the other historians from Hans Gram onwards wrote with scholarly precision, with complete references to the many obscure or previously unknown sources they unearthed and published. The early papers by Gram and the later contributions by his successor as Historiographer Royal, Peter Frederik Suhm, are excellent examples of an emerging critical tradition. In this connection one must also mention the only contribution made by Langebek to the Writings of this Society, a huge *History of the Mining Industry in Norway* (Vol. VII) in the form of an exhaustive collection of source material which still has to be consulted by industrial historians.

However, perhaps the most important contributions to the writings were two early papers on linguistic problems, which inaugurated the study of comparative philology in Denmark. The first of them was a *Consideration of the Origin of the Language of Greenland* and its



Title page and map of Sealand from the first volume of the Danish Historical Almanac published by the Society 1760-1782.

Difference from other Languages, which was published in Vol. II (1746) by Wøldike, whose extensive knowledge of both modern European, Classical, and Semitic languages was unsurpassed by any of his contemporaries in Denmark. His only material was a translation of the Four Gospels into Eskimo, made by the missionary Poul Egede (1708-1789) and published in 1744 by the Orphanage Press. On this basis Wøldike was able to describe the elements of Eskimo grammar and vocabulary, and to prove that this language was not related to any language in Europe or the East, but that it had many features in common with the dialect of the East Canadian Indians. This was a result of great interest and would have deserved more scholarly publicity than the Writings were able to provide. – The other philological contribution to this area was one of the posthumous papers by Hans Gram, in which he gave a Specimen of Danish Words and Idioms explained by the English Language (Vol. V). Here Gram argued that the usual approach to the problem of the origin of Danish via Old Norse (Icelandic) was too narrow; it was necessary to examine also the relationship between the early Danish language and Old Anglo-Saxon, in particular since the written evidence of the latter tongue was earlier than that of Old Norse. Taken together, there is no doubt that these two papers were instrumental at least in preparing the soil for that revival of comparative philology which occurred in the following century through the pioneer work of Rasmus Rask.

Everything considered, even if not all the contributions reached the same scholarly standard, there can be no doubt whatever that the Writings were an extremely important innovation from which all academic circles in Denmark would profit. On the other hand most of the papers were either too specialized or too technical to appeal to a wider public. This was not only damaging to the sale; it also meant that the Writings did not contribute much to making the existence of the Society known to all educated layers of society, as the original intention of the President had been. This explains why at the first meeting of 1754 Holstein suggested that the Society should also publish another learned journal of a more popular character. This met with opposition from some of the members, who were reluctant to assume extra work for the Society; moreover, there already existed a periodical called *Kiøbenhavnse nye Tidender om lærde og curiose Sager* (The Copenhagen News of Learned and Curious Matters) with which a new periodical would have to compete. Nevertheless, Holstein's idea was kept alive, not least by Langebek, and repeated discussions led to the result that the Society finally embarked

upon the annual publication of a *Dansk Historisk Almanak*, which appeared regularly from 1760 to 1782.

As the title indicates, the work was primarily an almanac which listed the dates of the following year, numbering them both according to the old Julian Calendar and the new Gregorian Calendar which had been introduced in A.D. 1700. There were also information about the hours of the rise and setting of the Sun and Moon week by week, and indications of the texts of the Sunday Gospels. The slender historical contents of the Almanac were limited to a set of one-line notices which indicated day by day some historical event that had occurred on the date in question. Apart from such standard matter the Almanac also published a long succession of papers on many subjects, including reports on the weather of the previous years, sunspots, the Venus Passage in 1769, and a series of astronomical and geographical tables for a variety of purposes. Each issue also contained a small copperplate map of a particular region in Denmark and other parts of the King's possessions. Occasionally there were literary contributions, such as a biography of the Royal Calendariographer Niels Heldvad (1564-1654) written by Langebek, who also published a valuable bibliography of books printed in Denmark before, during and after the Reformation; it appeared in three successive issues 1764-1766.

This modest publication was a useful link between the Society and the general public, and seems to have sold well. Nevertheless, the publication stopped in 1782 and was never resumed despite repeated attempts to revive it. The reason seems to have been that the official Almanac was printed by the University Press, which in 1773 obtained a monopoly of publishing calendars and similar publications by a Royal Privilege that was put into force in 1782, when the printer died and was succeeded by his son.

CHAPTER VI

Measuring the Country

There can be no doubt that both the regular meetings and the publications of the Society made a gradually increasing impact upon the intellectual situation of the country; but it is doubtful whether this rather unsystematic occupation with a casually arranged number of subject matters would have been able to keep the Society alive during the difficult years ahead (see Chapter VII) if it had not also been involved in a long-term public project of great national interest. Actually two such projects were launched in the 1750's, both of them in some way connected with Captain Norden's exploration of Egypt, the report on which the Society had published in French in 1750-55. This *Voyage d'Egypte* caused quite a stir among scholars in many different countries. Among them was the famous German orientalist J.D. Michaelis (1717-1791) in Göttingen, who in 1756 conceived the idea that the King of Denmark might sponsor a similar expedition to even less known regions of the Middle East. Presenting this project to the Danish Foreign Minister (the First Secretary of the German Department) Count Johan Hartvig, Ernst Bernstorff (1712-1772), he had a favourable reply, to which he responded with a long and detailed memorandum on how such an expedition should be planned, prepared and carried through (1756 August 30). Michaelis pointed out that in particular Arabia Felix (Yemen) would be a rich field for exploration and that Biblical scholarship would profit from the investigation *in situ* of the languages and literary remains of this and the neighbouring regions; but their fauna and flora should also be explored, their topography described, and the coordinates of their principal localities determined by astronomical observations.

Bernstorff acted quickly and was able to inform Michaelis already on October 2 that the King had approved the project, soliciting the advice of several professors at the University. This took some time, but resulted at last in a detailed Royal Instruction (dated 1760 December 15) to the six scholars who had been preparing themselves in the meantime to form the scientific staff of the expedition. Led by a former student of Michaelis, F. C. von Haven (1727-1763), they left Copenhagen 1761 January 4 on board a naval vessel which took them to Egypt. From a human point of view the expedition was a tragedy. One by one its members died

except the cartographer Carsten Niebuhr (1733-1815), who returned to Copenhagen in 1767, having been as far East as Bombay. But the scientific results were remarkable. Many manuscripts in Eastern languages had been shipped to Denmark together with specimens of a great variety of previously unknown plants and animals. And when Niebuhr returned after a strenuous journey on horseback from Persia, he brought with him the first precise copies of the famous cuneiform inscriptions of Persepolis. Spending the following years in Copenhagen working on this material, he was able to publish his *Beschreibung von Arabien* (1772) followed by the two volumes of his *Reisebeschreibung von Arabien und andern umliegenden Ländern* (1774-1778), while his important astronomical observations were not brought to light until 1801, when they were published by the Austrian astronomer A. von Zach.

In this great scientific project the Society had no share whatever, except that C. G. Kratzenstein (1723-1795, elected 1753) had been one of the consultants who had helped to prepare the instruction. At first sight this seems to be a surprising fact that might be construed as an instance of bureaucratic rigidity or even jealousy: The Arabian project was dealt with by the German Department whereas the Society was wholly dependent on the Danish Department, and governed by the head of the latter. But this is no satisfactory explanation. Bernstorff and Holstein were on good terms, and it is unthinkable that they should not have discussed and agreed upon a project of this magnitude. Now the Society had from its very beginning been occupied with matters concerning the King's own lands, and its undertakings in the various kingdoms could be sufficiently supported by the domestic administration. On the other hand the oriental expedition was essentially a foreign affair, depending for its success on much diplomatic activity at Eastern Courts in order to obtain permission to operate in countries where the Danish King had no authority. Moreover, the Society was unable to lend much scholarly support to the expedition, since Marcus Woldike had died in 1750 without being replaced by an orientalist of a similar standing. Finally, at the time when the expedition was being planned in detail, the Society had already embarked upon another major project that would absorb much of its energy for many years to come. Everything considered it was, therefore, a correct decision to place the Arabian Journey under the auspices of the Foreign Department.

Another thing is that the Society as such never gave Niebuhr the credit he so greatly deserved. The Swedish Academy in Stockholm made him a member already in 1776, and many years later he was also ad-

314

under Sassanidernes Herredömmе, da flere af de Inscriptioner, som Hr. Silvestre de Sacy saa hældigen haver forklaret, ere forfattede i Græsk og Pehlvi Sprog *t*). Det kommer da allene an paa, om det kan gjøres rimeligt, at adskillige af de persepolitanske Inscriptioner ere af samme Beskaffenhed, og altsaa kunne kaldes trilingves. Da Ordene endnu ere ubekjendte, maa vi holde os til Tegnene, og slutte fra disses Igjæntagelse til deres Overeensstemmelse paa de bestemte Steder.

Niebuhr har tre korte Inscriptioner, som staae ved Siden af hinanden, Tab. *G. F. E.* af hvilke *G.* indeholder Bogstavskrift. Paa de fire Linier som udgjøre denne Inscription, forekommer fire Gange et Ord med syv Bogstaver, hvilket overalt er hyppigt i alle Inskrifter af denne Classe. Det er Ordet:

⚡⚡ ⚡⚡ ⚡⚡ ⚡⚡ ⚡⚡ ⚡⚡ ⚡⚡

Paa de med Stederne i Inscriptionen *G.* corresponderede Steder forekommer i Inscriptionen *F.* følgende Tegn:

⚡ ⚡⚡⚡

Det samme er Tilfældet i Inscriptionen *E.* hvor det samme Ord lige saa mange Gange, og paa de corresponderende Steder udtrykkes ved en Gruppe af sex Pile:

⚡⚡⚡⚡⚡⚡

Og hvad der især taler for denne Sags Rigtighed, det er, at da Ordet med de syv Bogstaver paa den anden Linie af Inscriptionen *G.* forekommer tvende Gange i Rad, det samme ogsaa finder Sted med Tegnene i Inscriptionerne *F.* og

t) *Memoires sur diverses Antiquités de Perse.* første Afhandling.

A page from Friedrich Münter's paper on the inscriptions at Persepolis (as copied by Carsten Niebuhr), in which he laid the foundations of the following decipherment of cuneiform script (*Writings*, 3rd Series, Vol. I, p. 339). — The page also illustrates the Roman typeface which replaced the Fraktur in all publications of the Society from 1800 onwards.

mitted into the Institut de France in recognition of his astronomical merits. But there is no evidence that he was ever invited to join the Society, even when several of its members were busily making use of the results of his expedition. Among them was the orientalist and church historian Fr. C. H. Münter (1761-1830, elected 1798), who published in the first volume of the new series of the Writings a treatise on the Investigation of the Persepolis Inscriptions (1801), which made an ingenious contribution to the decipherment of the Persian cuneiform script before this problem was finally solved by Grotefend (1802), independently of Münter's work, but still on the basis of Niebuhr's copies.

Not being involved with the exploration of Arabia, the Society was free to devote much of its work to a domestic project of obvious importance for the country, — a complete topographical survey of the whole Kingdom of Denmark of which there were no satisfactory maps. The many general atlases published in Germany and the Netherlands usually included a map of the country (alone or as a part of Scandinavia) based upon unreliable and uncritically accepted data and therefore useless for any serious purpose. An attempt to remedy this situation began in 1647 with the appointment of Johannes Mejer (1606-1674) to a new position as Cartographer Royal. He produced numerous particular and one general map (1650), the latter being more detailed and accurate than any of its predecessors. After the introduction of the absolute monarchy (1660) a general land register without maps, but with much topographical information, was created for fiscal purposes in the years 1681-1688, and in 1691-1697 the mileage of all the principal roads was measured by a special odometer or "mile waggon" constructed by the astronomer Ole Roemer. But still only a handful of geographical coordinates had been precisely determined by astronomical observations with the result that it was impossible to connect the various regional maps into a uniform whole.

At about the same time new methods for determining geographical coordinates by triangulation in the field had been developed to great perfection in France. The pioneer was the Abbé Jean Picard, who worked between Paris and Amiens, and in 1671-1672 visited Denmark in order to find the difference of the longitudes of the new Paris Observatory and Tycho Brahe's former observatory Uraniborg on the island of Hven. His work was later continued towards the south and west of France, and in 1744 no less than 800 geodetic triangles had been measured and described in a great work by Cassini de Thury as the basis of a projected *Carte Générale de la France*.

Ultimately this research was inaugurated by Colbert, who wished to improve the detailed knowledge of France in order to promote its mercantilistic economy. A more scientific motivation appeared when the publication of Newton's *Principia* (1687) soon gave rise to the great debate on the correct shape of the earth. To solve the problem of whether the earth was flattened or elevated at the poles it was necessary to measure the length of a degree on the meridian in both southern and northern latitudes, and in 1734 a French expedition led by Maupertuis and joined by Anders Celsius and other Swedish scientists went to Lapponia for this purpose. This made the new geodetic methods known in Sweden, while the previous visit by Picard to Denmark seems to have made no impact in this country.

The Swedish experience was part of the background of the first project to modernise the cartography of Denmark. Here one can also discern a slight irritation by the fact that the King had paid for a costly attempt to improve the topography of Egypt without realising the necessity of a more precise knowledge of his own country. At least the Archives of the Society contain a proposal or memorandum in which an unknown author wrote – obviously when Norden's work was being prepared for the press by the Society – that

the expensive work which the public is going to see published by and by on Egypt, occasioned by the travels of the late Captain Norden, will cause many people both here and in other countries to ask if, at long last, we Danes should not consider the illustration of our own countries, and in particular try to redress the undeniable lack of good and fairly detailed maps of the country, in especial since our Swedish neighbours have recently forestalled us in this matter [Lomh. IV, 4].

The latter phrase may refer to a series of four maps of the Swedish provinces which had, until 1745, been published under the auspices of the Swedish Academy of Science. The author goes on to suggest that the Society might undertake a similar project in Denmark, maintaining that it would not be more expensive than the Egyptian expedition, and concluding with a rather sketchy plan for how to proceed with the work: Mejer's and all other civil and military maps would be collected and handed over to a committee of the Society. Its members should then select the best specimens, compare and "if possible" correct them, assisted by a carefully chosen corps of army and naval cadets, while the copperplates could be made by the engraver of the Society when he had finished the plates for Norden's work.

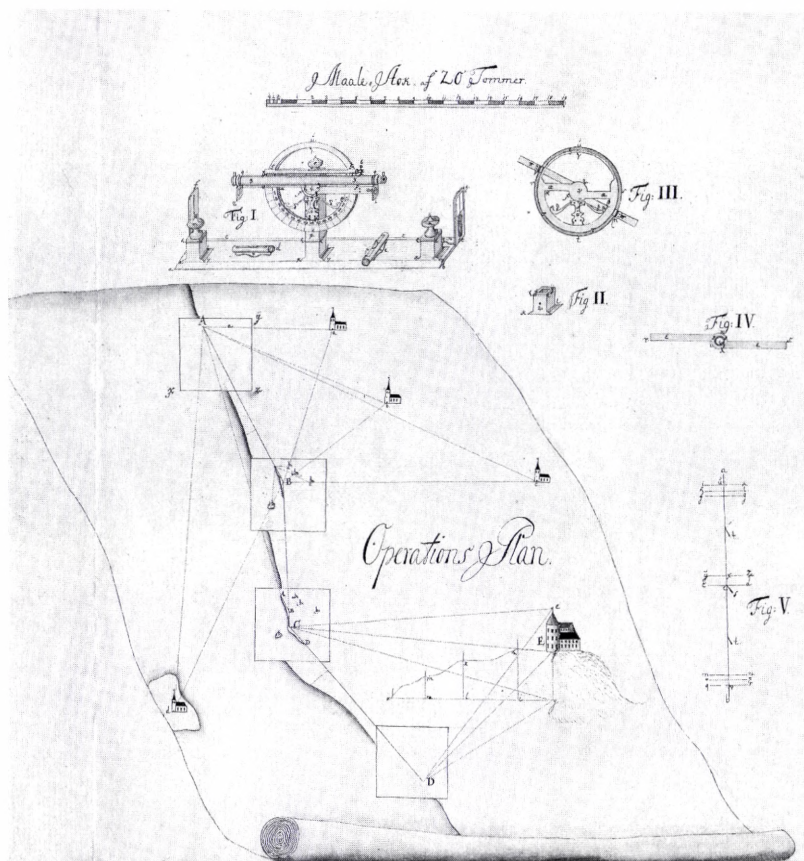


Illustration from Peter Koefoed's original proposal (1758) for a topographical survey of Denmark, showing his measuring instrument and the principles of plane table surveying. (Manuscript in the Archive of the Society).

It is clear that the anonymous author had pointed to an obvious need, and that a detailed topographical survey would indeed (in his own words)

to some extent develop the *Historia naturalis* of the countries and also be the occasion to consider one or another economic improvement [Lomh. IV, 5].

But the method he recommended – the unification of already existing maps of vastly different values – was utterly naive and out of touch with the ongoing reform of geodesy and cartography in other countries. A much more radical approach would be necessary. Perhaps this was real-

ised by the new mathematical members of the Society; but there is no evidence that the project was ever considered at a meeting.

Also the next initiative in this matter came from outside the Society.

At a meeting 1757 February 18

A proposal was read from a student by the name of Koefoed, who offered to make accurate maps of Denmark without any other remuneration than to be designated as professor of mathematics at Odense [Lomh. IV, 5].

The student was Peder Koefoed (or de Koefoed, 1728-1760). He was born in Norway, but belonged to a well-known family on the island of Bornholm, where he had worked as surveyor and cartographer of the Royal Architect Laurids de Thura, who was behind the project. Actually Koefoed sent his proposal directly to the King (accompanied by strong recommendations from de Thura and various mathematicians), who asked the Society to pronounce upon it. The result was a Royal Rescript dated 1757 February 25, in which King Frederic V promised Koefoed the next vacant chair of mathematics at the Gymnasium of Odense on the condition that he would deliver one or two carefully prepared special maps of Denmark each year, and that the work would begin already in the coming spring.

This extremely speedy procedure shows that there must have been a general consensus in the administration on the desirability of the project, and also that Koefoed was made responsible for it only on the strength of his recommendations, his original proposal being very brief and without any details of how he was planning to do his work. However, the authorities had also seriously underestimated the time required for the project and even for starting it up. In fact, not much was heard of Koefoed until November 1758, when he presented a specimen map of the Copenhagen area to the Society. In the meantime he had provided himself with a considerable and quite expensive range of instruments and other equipment, which is known from an inventory made after his death by Horrebøw and Hee for the use of the Society.

Koefoed's project was conceived in a modern spirit and on a grand scale. Disregarding all previous data, he intended to construct his maps exclusively from basic measurements made in the field. Distances were measured by measuring chains and rods, and significant points in the landscape determined by means of the plane table which Koefoed now introduced into Denmark. It was used in connection with an alhidade of his own design, made by the Copenhagen instrument maker Fr. Muth, and described in a 12-page treatise accompanying the first map. Besides

the usual dioptra it had two spirit levels at right angles to one another for adjusting the table to the plane of the horizon, and also a small telescope with a graduated arc for measuring angles in the vertical, so that altitudes of points at a known distance could be found [Lomh. IV, 9]. But Koefoed only succeeded in finishing the Copenhagen map. During his work in the neighbouring counties he died in the summer of 1760 at the early age of 32, leaving behind him a considerable debt to instrument makers and assistants, the greater part of which was paid by the King on the condition that all his scientific equipment was handed over to the Society, which was made responsible for the continuation of his work.

In consequence new plans had to be made. One of Koefoed's young assistants, Thomas Bugge (1740-1815, elected 1775) was invited to a meeting of the Society in February 1761 in order to report on the state of the project and its possible future, at the same time as Christen Hee presented a (now lost) plan for its continuation. A more detailed plan with precise instructions for the surveyors was later presented to the King, whose rescript of 1761 June 26 gave the project a new start by defining its purpose and scope, assuring its financial viability, and giving the Society the sole responsibility for carrying it out. With regard to the first point the rescript stated that the project was not concerned with a

geometrical or special, but only with a geographical and general survey aiming at determining how much land and water there is in the country (...), showing the locations and mutual distances of all towns, churches, castles, public buildings, factories and manor houses (...), the courses of roads, rivers and streams, and in particular the bays and sea coasts of the country with their neighbouring skerries and rocks, since the latter kind of survey is very important for the defence of the country (...) and in particular also for commerce and navigation [Lomh. IV, 15ff.].

This underlined the purely topographical character of the project as well as the economic and military motivations for adopting it. Strictly speaking there was nothing here that went beyond what had already been required of Koefoed. But then the rescript struck a new note by stressing that the project presupposed a serious knowledge of astronomy, along with theoretical and practical geometry, hydrography, and drawing. In consequence it was absolutely necessary that

the so-called Round Tower Observatory be put into such a state that it can equal the principal observatories of Europe.

The University was asked to take the necessary steps to perform this

task. Perhaps because Horrebow might be deemed responsible for the decay of the observatory, the University asked the Norwegian astronomer Jørgen Nicolai Holm (1727-1769) to make proposals for its modernisation. This resulted in a long and detailed report which contained, among other things, also a sharp warning against employing Fr. Muth as instrument maker, since besides charging exorbitant prices he was also both arrogant and incompetent.

This insistence on astronomy reveals that the project had in fact changed its character, presumably because the Society had established the first contact between Hee and Bugge, both of whom were aware of the fact that field measurements over a large area had to be tied together by a network of precise coordinates determined by modern methods.

The Society responded to the Rescript by establishing a standing Surveying Commission to supervise the project in all its details until it could be completed. Its first members were Hielmstjerne from the Danish Department, his *Maître des requêtes* Bolle Willum Luxdorph (1716-1788, elected 1750), the mathematician Christen Hee (1712-1782, elected 1747), and the astronomers Christian Horrebow (1718-1776, elected 1747) and J.N.Holm (who was not a member of the Society). From now on the minutes of the Society show that the great survey was a standard topic of discussion at the meetings, and that the Chief Surveyors once a year made an oral report on its progress. Otherwise not too much is known about the way in which the work began; but a report from Hielmstjerne to Holstein dated 1762 June 27 [Lomh. IV, 20ff.] reveals that during the preceding winter Hee had duly lectured to the two Chief and four Assistant Surveyors who had been engaged, and that they were now doing practical exercises at the observatory while Hee and Holm were at work on a detailed instruction for the staff.

By this time the field work had already begun and by October 1762 the Chief Surveyors Thomas Bugge and Peder Wilster had completed a specimen map of the Copenhagen area which Bugge demonstrated to the Society at a meeting on December 13. In the following January Hielmstjerne presented the accounts of the expenses of this first phase of the project. Work started again in May 1763 in the counties to the north and west of the Capital, being gradually extended to more distant areas. It was performed in the following way. First a principal line was marked by ranging poles across the terrain in the direction from north to south as determined by a magnetic compass. Along the line a number of stations were selected and their mutual distances measured by means of steel chains of a length of 25 cubits. At each station a survey was made to the

east and west of the line by plane table and alhidade. When the line was completed this procedure was repeated along a second principal line 10,000 cubits further to the west. Fourteen such principal lines covered the whole of Sealand and the island of Møen.

This method corresponded more or less to what Koefoed had envisaged; but at the very beginning it was realised that it would be quite insufficient. The plane table surveys resulted in hundreds of small maps which it would be impossible to fit precisely together unless they could be related to a network of points determined by triangulation and, in some cases, by astronomical determinations of their geographical coordinates. This must have been clear to both Hee and Holm, and perhaps also to Bugge, already at the planning stage of the whole project. This explains the insistence on astronomy in the Royal Rescript of 1761, and it also explains why Hielmstjerne's report to Holstein in June 1762 asks for permission to order a particular instrument, although the purpose of the latter was not clearly stated. Hielmstjerne explicitly warned against engaging Fr. Muth to do this work since he was "inaccurate and expensive". Instead it was given to the Swedish instrument maker Johan Ahl (1729-1795), who had recently moved to Copenhagen from Stockholm where he had worked for the Swedish Academy of Science. He had been the pupil of Daniel Ekström (d. 1755) who had worked with George Graham in London. In this way the English instrumentmaking tradition was carried to Denmark, where Ahl came to play an important role for over 30 years as provider of much of the equipment of both the Observatory and the Surveying Commission. For the latter he first made a very versatile instrument for measuring angles in both the horizontal and the vertical planes, with a graduated full circle and telescopic sights [Lomh. IV, 94].

The first of these "Ekström Circles" was ready in 1764 when Bugge began the triangulations by establishing a basis line almost 10 km long outside Copenhagen and measured precisely by means of four standard rods, each of which was 12 feet long. From each end of the basis sights were made to the Round Tower, the angles between the lines of sight and the basis being measured by the instrument, so that the two other sides of the triangle could be found by trigonometrical calculation. One of these sides was then used as basis of a second triangle, whose third vertex was a hilltop about nine km to the west. In this manner Bugge worked his way all around Sealand, establishing a net of 80 triangles of a quite remarkable precision. When three triangle sides (at Roskilde, Kalundborg and Næstved) were checked by direct measurements by



The network of geodetic triangles around Sealand measured by Thomas Bugge and Ole Wessel 1765-1771. – From Bugge's description of his cartographical methods, published in Danish at Copenhagen in 1779.

rods, the difference between the measured and the calculated values in neither case exceeded one cubit. The complete net of triangles was placed in a correct position relative to the meridian by means of a line from the Round Tower to the southern spire of Roskilde Cathedral. Here the error was only 23 seconds of arc [Lomh. IV, 96].

After seven summer campaigns the whole of Sealand had been surveyed and triangulated, and the maps began to appear. Already in 1766 a map of the Copenhagen area on the scale of 1:80,000 was engraved and published by the Society. It was followed in 1770-1772 by four partial maps of Sealand on the scale of 1:120,000, while a general map

of Sealand and Møen on the scale of 1:240,000 did not appear until 1777. In between these dates were the difficult years when the Society was without a president and the regular meetings had stopped. Nevertheless, Hielmstjerne saw to it that the cartographic project continued with unabated force with campaigns in the southern islands of Falster and Lolland in 1771-1774 and the island of Funen in 1772-1777. This was made possible by an increase of both the staff and the government grant, which was raised in 1771 by Struensee from 1600 Rbd to 2100 Rbd per year. We shall return to the fate of the project on later occasions. But at this place it is natural to reflect upon its general importance. First and foremost it resulted in the first detailed and reliable maps covering in the end the whole of Denmark, Schleswig and Holstein. As such it contributed enormously to the topographical knowledge of the country. But apart from this scientific achievement the project also contributed to keeping the Society alive during all its troubles, almost defining its identity as a body responsible for the greatest single task which the scientific community as a whole had ever undertaken.

Another significant, although more indirect consequence of the survey was the emergence of a previously non-existing scientific profession of surveyors and cartographers. Over the years more than forty people collaborated on the project, apart from engravers and printers [Lomh. IV, 139-142]. Several among them left a clear imprint on contemporary society, while at least one of them rose to universal fame although only long after his death.

The most prominent member of this long succession of scientists was Thomas Bugge, who had been Koefoed's assistant and also helped Christian Horrebow at the observatory. It was natural that he should become one of the two first Chief Surveyors (1762) and also should be responsible for the trigonometrical survey which he himself inaugurated and supervised until his death. On the grounds of his scientific and administrative ability he was admitted to the Society at the great election in 1775 (on which more will be said in the following chapter). Two years later he was appointed to the chair of mathematics and astronomy after Christian Horrebow, whom he also succeeded as director of the observatory. This marked the end of the Horrebow era and the beginning of a period of renewal, for which Bugge prepared himself by a long journey 1777-1779 to the observatories in England, France and other countries, describing their instruments and scientific work in a Diary which remains an important source of the history of astronomy in this period.

On his return Bugge first composed a work (in Danish) entitled A

Description of the Surveying Methods Used for the Danish Geographical Maps (1779) [Lomh. IV, 35]. It was written at the request of the Society and is the principal source for the early history of the cartographical project as a whole; it was accompanied by a publication in the Writings (XII (1779) 65-84), giving the geographical coordinates of many localities in Sealand. At the same time he received from the government a considerable grant of 7000 Rbd for a thorough renovation of the Round Tower Observatory, which he equipped with many new instruments imported from abroad or constructed by Ahl. Also on his initiative a number of small observatories were erected in Norway, Iceland and Greenland, and in the Indian colony at Tranq̄ebar. His many practical duties perhaps prevented him from bringing his scientific abilities to full fruition; but it is worth remembering that it was he who first introduced Newton's laws and planetary theory in a Danish university textbook on *The Elements of Astronomy* (1795). We shall meet with him later as one of the first scientific secretaries of the Society.

Bugge taught practically all the scientific staff of the project, his first pupil being Niels Morville (1743-1812, elected 1779), who was with him as assistant surveyor from the very beginning. Later he was responsible for the trigonometrical survey (1772-1777), which he left in 1778 for a better remunerated post in the economic survey of the country directed by the Department of Finance. The following year he was elected a member of the Society and became a frequent contributor to its Writings. His decision to leave underlined the fact that the annual grant from the government to the project was insufficient to provide a decent salary to a staff comprising usually four surveyors, each with six or eight temporary assistants hired for the individual campaigns, besides the engravers and printers. All this points to the conclusion that the project might have perished had it not been for the personal dedication of a number of workers who were prepared to suffer both economic privation and the hardships of the field work for years on end. Two among them deserve in particular to be remembered.

Søren Bruun (1751-1830) served longer on the project than anybody else, beginning as Assistant Surveyor in 1768 and finishing as director of the whole project from Bugge's death in 1815 until its completion in 1821. Besides his official work he found time to write a Prize Essay to the Society on the application of a guage rod to the measurement of the contents of casks and barrels (1796) for which he was awarded a prize of 200 Rbd. He too was offered membership of the Society in 1808, but was too modest to accept it, consenting instead to receive a silver medal

as a rather poor token of the patient work of a lifetime [Lomh. III, 193ff].

With respect to long service Bruun was almost equalled by the Norwegian Caspar Wessel (1745-1818), who joined the survey in 1764 and in 1778 succeeded Morville as leader of the trigonometric observations. His only publication appeared in the Writings of the Society as a treatise *Om Directionens analytiske Betegning* (The analytical Characterization of Directions, 2nd Series V (1799) 469-518). It was immediately forgotten by Danish mathematicians and – being in Danish – was also ignored in other countries. It was not until 1895 that it was discovered to be a highly original and important contribution to the theory of complex numbers, at the same time as it contained the first exposition of vector geometry in three-dimensional space. In consequence the Society decided to honour his memory as the only 18th-century Danish mathematician of international calibre by publishing his work in French translation in the book *Essai sur la représentation analytique de la direction, par Caspar Wessel*, which appeared in Copenhagen in 1897. This rather sad story shows that the original decision to publish the Writings in Danish only could have unfortunate consequences for the general development of science. It also gives food for thought that Wessel's treatise was the work of an amateur mathematician without any connection with the meagre scientific milieu of the university.

While much of its energy was devoted to the topographical survey the Society also became involved in an important astronomical project requiring international cooperation. It was concerned with the transits of Venus across the disc of the sun. Such events were of great importance for astronomy as a means of determining the mean horizontal parallax of the sun, – i.e. the greatest angle under which a radius of the earth would be seen from the sun – from which the distance from the earth to the sun can easily be found. The method presupposes that the time used by the planet for crossing the solar disc from one rim to the other is observed from two stations with widely different latitudes. In the 18th century only two such transits occurred, in 1761 and 1769 respectively, each of them giving rise to much astronomical activity all over the world, and also to scientific expeditions to distant regions, such as Captain Cook's voyages on the Pacific Ocean. The French astronomer Jérôme de Lalande (1732-1807) in Paris acted as coordinator of the results.

In Denmark the government took steps to have the transit of 1761 observed both in the capital and in the city of Trondheim on the west coast of Norway. In Copenhagen the matter was in the hands of the

professor of astronomy Christian Horrebow (1718-1776), who observed from the Round Tower. In Trondheim the observations were made by Thomas Bugge, who had been sent there at the request of Holstein in collaboration with Kratzenstein. In both cases the results were disappointing, partly because of bad weather, and partly because only simple, non-achromatic telescopes were used. Moreover, the observations were not properly reduced before they were sent to Lalande, who decided to ignore them although they were reported in the *Mémoires* of the French *Académie des Sciences* (1761, 114f.).

This left the impression abroad that the Copenhagen astronomers were incompetent and unable to handle even simple observational programmes requiring only a clock and a telescope. In order not to repeat the fiasco the government took the unprecedented step of inviting a foreign astronomer to observe the transit of 1769. The choice fell on the director of the observatory in Vienna, the Austrian Jesuit Father Maximilian Hell (1720-1792), who arrived in Copenhagen in May 1768 accompanied by his assistant, the Hungarian-born Johan Sainovics (1733-1785), and bringing with him both a telescope and a pendulum clock from Vienna. In Copenhagen they were equipped with, among other things, a new 10-foot achromatic telescope acquired from Dollond in London, a brand-new 3-foot quadrant made by Ahl according to a description in Lalande's *Astronomie* (II, fig. 147), and also a smaller and more handy quadrant borrowed from Carsten Niebuhr, who had used it on his Arabian expedition.

After a strenuous journey of a hundred days the two Jesuits and their Norwegian assistant, Gunnerus's amanuensis J. F. Borchgrevink, reached the small Norwegian township of Vardø north of the arctic circle (latitude 70°). Here they spent the winter erecting a small observatory on the ancient fortress of Vardøhus and checking their instruments, and on 1769 June 3 they finally succeeded in making a set of perfect observations of the transit. Another observation on the following day of a solar eclipse enabled them to find the longitude of Vardøhus, the latitude of which had already been determined by means of Ahl's quadrant. Back in Copenhagen in October the two Jesuit astronomers spent seven months in the capital as frequent guests of the Society, of which they both became foreign members.

Hell presented his results to the Society at three successive meetings, speaking in Latin, so that his long and careful report had to be translated into Danish before it could appear in the *Writings* (X (1770) 537ff and 619ff). His original Latin version appeared separately at Vienna in 1770

and was sent to Lalande, who complained of the delay and never gave Hell the credit he deserved. The transit had also been observed, although less completely, by a Swedish expedition to Kajane in Finland, and comparing both the Northern observations with data from Canada, California and Tahiti, Lalande derived the following values for the solar parallax (expressed in seconds of arc).

	Vardøhus	Kajaneborg
Canada	9.08	8.49
California	8.81	8.48
Tahiti	8.72	8.52
Mean value	8.87	8.50

The mean value of Hell's results compares very favourably with the modern value of 8.79". This was of course unknown to Lalande, who believed the Swedish value to be close to the truth (*Astronomie* II, 505). But Hell's results prove him to have been a careful observer. Nevertheless, many 19th-century astronomers believed that he had obtained his excellent results by tampering with the raw data of his observations, – a myth which was finally refuted by the American astronomer Simon Newcomb who in 1883 examined Hell's original manuscript records in Vienna.

It is worth noticing that the expedition to Vardø also resulted in an interesting philological contribution. Sainovics had spent a part of his time on a study of the vocabulary and grammar of the Lappish language; on his return to Copenhagen he read to the Society a Latin paper offering Proof that the Languages of the Hungarians and the Lappians are one and the same, which was printed in Danish translation in the Writings (X (1770) 653-732). This corroborated an already known hypothesis by a remarkable, although now forgotten instance of good field work.

Otherwise the Vardø expedition was a memento to the scientific community. It did not only underline the necessity of international collaboration on the solution of fundamental problems; it also disclosed the languishing state of Danish astronomy in the last years of the Horrebow dynasty. Consciously or unconsciously the Society took notice of this situation by announcing a whole string of Prize Essays in astronomy from 1768 to 1780 (when there was a pause until 1821), the last being an Essay on the length of the tropical year, for which a gold medal was awarded to Lagrange.

CHAPTER VII

The Years of Crisis

The early history of several learned societies shows a surprisingly regular pattern. First comes an initial period in which the society flourishes without strict rules or much bureaucracy, stimulated by the contagious enthusiasm of its founders, in a way that becomes more or less decisive for future activity. Later follows a period of stagnation. The founding fathers are gone, and the original impetus is worn thin; the traditional activity becomes an uninspired routine, and it is difficult to engage the new batch of members in the undertakings they have inherited from their predecessors. Sometimes this languishing state leads to the disappearance of the society as such. In other cases it survives through a crisis that results in a new beginning, and usually with a more strict organisation, defined by definite statutes and often imposed by outside authorities.

A good example of this course of events is found in the fate of the French Academy of Science in the last decades of the 17th century, when its scientific activity was on the decline. Many of the members were obliged to spend their time on the construction of the fountains at Versailles and other purely technical projects, at the same time as the Academy suffered to some extent from religious intolerance after the revocation of the Edict of Nantes in 1685. A new start was made in 1699, when the Academy was provided with a set of very detailed statutes defining the various classes of members and their respective activities along the lines described above (Chapter 1). In consequence the originally free association of scientists was transformed into a bureaucratic institution under full government supervision.

In Berlin the Academy passed through a languishing period after the death of Leibniz (1716), until the Prussian King Frederick II in 1744 took its affairs in hand. Firstly, the Academy was combined with the *Nouvelle Société Littéraire* (founded by Count Samuel von Schmettau in 1743). In the following year it was ordered to publish only in the French language, and in 1746 the French mathematician P.-L. de Maupertuis (1698-1759) was appointed president of the society, which was now more a French institution on German soil than a national academy. After

a long vacancy following the death of Maupertuis, the King obtained full control of the Academy by assuming the office of president for himself and keeping it until his death in 1786.

It has been suggested that the Copenhagen Society also underwent a period of stagnation and that this happened during the 1760's, when about twenty years had passed since its foundation. An argument for this idea would be the increasing intervals of time between successive volumes of the Writings, which seem to indicate a declining activity among the members. Now it is true that the Secretary, at least on one occasion in 1763, complained that two years after the appearance of Vol. VIII he had sufficient matter for only one half of the next volume. It is also true that no one among the members was able to submit a contribution each and every year, as the President seems to have wished them to do. In fact, most of them produced only a single paper during the whole decade, with the notable exception of members like the medico-physicist Kratzenstein, the historian Suhm, the economist Brünnich, and a few others. Nevertheless, it would be somewhat misleading to use the frequency of the volumes as an index of the industry of the members; for if we compute the average number of published papers per year, we arrive at the following figures

2.5	in	Vol.	VII	1758
6.0	in	Vol.	VIII	1760
4.0	in	Vol.	IX	1765
4.6	in	Vol.	X	1770

Since the number of members remained at a fairly constant level of 27 to 30 during the whole decade, such changes are too small to be significant. In consequence, there must be another explanation of the increasing interval between the volumes. Here it is rather obvious simply to remember the fact that the previously mentioned preponderance of scientific and medical papers came to the fore in Vol. IX (1765) and Vol. X (1770). Since these contributions were always considerably shorter than the historical papers, a greater number was needed to fill a volume of the usual size.

During this period the Society was greatly affected by the loss of some of its most prominent members. Gram had died already in 1748, and Wøldike had followed him two years later. Now in the 1760's most of the other founding fathers passed away, with the result that by 1770 only Hielmstjerne and Møllmann remained. Most serious was the death

of the President. Johan Ludvig Holstein had been the undisputed leader of the Society for more than twenty years. His high position as First Secretary of the Danish Department of the Chancery (i.e. Minister of Home Affairs) had brought both royal favour and financial support to the Society, and his house had been the usual place of its meetings. His initiative had been felt behind most of its undertakings, to the extent that its activity was usually suspended when he was absent from the capital or suffering from illness. On January 24, 1763 he presided for the last time over a meeting, only five days before his death. The Society was not slow to pay him the tribute he deserved. At the next meeting on February 18 Hielmstjerne gave a laudatory address in memory of his old friend and mentor, and it was also decided to strike a gold medal in his honour. In the public press his next in command at the Department, Bolle Willum Luxdorph (1716-1788, elected 1750), published an obituary praising Holstein as "a faithful servant of Kings, defender of the Church, spokesman of the People, comforter of Orphans, and a shield against Evil", whose "Life was a continuous instruction to be remembered and followed for the well-being of the country."

In the Danish Department Holstein was succeeded by Count Otto Thott (1703-1785), who assumed all the functions of his predecessor and therefore also became the next President of the Society, of which he had been an honorary member since 1744. He belonged to the old Danish-Swedish nobility and had made a safe, but not very spectacular career through various financial departments and had also become a Privy Councillor (1758). He was a loyal and conscientious administrator, but a rather slow worker without much personal initiative and often unable to make necessary decisions. Less famous as a statesman than as a collector, he left to posterity a most impressive gallery of paintings at his stately home of Gaunø, and his collection of books at his Copenhagen residence grew to a total of 150,000 titles, – by far the largest library ever owned by a single collector in the country; his bequest of more than 4000 manuscripts and 6000 palaeotypes (printed before A.D. 1550) became some of the most cherished possessions of the Royal Library.

While Thott had more contact with the world of books than Holstein, he enjoyed less authority in the Society. His numerous public duties often prevented him from being present at the meetings, which were frequently cancelled because of his absence. However, it was probably due to his influence that in 1767 the King granted the considerable amount of 8000 Rbd. for the purpose of rewarding the Prize Essays; similarly when in 1782 he made his will, he left 2500 Rbd. to the

Society as a fund - the still existing "Thott'ske Legat" - for promoting research in agriculture and forestry. It was this benevolent, but somewhat inefficient man who presided over the affairs of the Society, when the storm broke which suddenly stopped all its activities and seemed for a while to threaten its very existence. In order to understand the background of this crisis it is necessary to consider the vicissitudes of the political life of the country after the death of King Christian VI.

Briefly told, the problem was how to govern an absolute monarchy with a reigning house in decay. The *Lex Regia* of 1665 had conferred all power without exception upon the person of the King as the supreme head of both state and church. It goes without saying that such a political system would work only if the monarch was assisted by loyal ministers and himself able to choose competent personal advisers. This had been the case with Christian VI, but under his successor Frederik V (1746-1766) the situation changed in a significant way. The new King was lazy and extravagant, leading a disorderly life, and ending up as a chronic alcoholic who was discreetly supervised night and day by the Court Marshall Adam Gottlob Moltke (1710-1792), who had been his tutor and to whom he was genuinely attached all his life. That his reign did not end in disaster was due to Holstein and other loyal heads of the various departments, who carried on from the previous administration; after some years they were joined by a statesman of the first water, Johan Hartvig Ernst Bernstorff (1712-1772), a Hanoverian who served as ambassador in Paris until in 1751 he was recalled to be First Secretary of the German Department (i.e. Minister of Foreign Affairs). It was he who adroitly succeeded in keeping the country out of the Seven Years War (1756-1763), and who in 1761 engaged the services of Heinrich Carl Schimmelmann (1724-1782), a Pomeranian upstart who proved to be a financial genius and soon became a powerful force behind all the efforts to improve the material prosperity of the country.

This solid and responsible "Government of Excellencies" met with a new and unforeseeable situation when the King was succeeded by his eldest son Christian VII (1766-1808), who at his accession was a mere boy of 17 years of age. He was not without intelligence, but already showed signs of serious mental aberrations. Periods of sensible behaviour were followed by bouts of excessive rage and violence, accompanied by childish and unwise political moves. Moltke was sacked as Court Marshall, and unscrupulous adventurers began to surround the King. The old "Excellencies" were powerless since the *Lex Regia* had made no provisions for the case of an insane King. They tried in vain to stabilise

his life by precipitating his unhappy marriage to the 15-year-old Princess Caroline Mathilda, a sister of King George III of England, by whom he almost reluctantly had a son (1768). His cruel neglect of the young queen and his nightly escapades in the company of the lowest scum of the capital were soon a public scandal, and it was obvious that the monarch was heading for a disaster for which the constitution had no remedy.

The decisive phase of this unhappy reign began in 1769 with the arrival of Johan Friedrich Struensee (1737-1772) at the Court. This German physician had accompanied the King on a voyage to England and France and was now made physician in ordinary to the young Queen, with whom he was soon on very intimate terms, resulting in the birth of their daughter in 1771. Together with the Queen and his friend Enevold Brandt, Struensee formed a camarilla at the Court, succeeding in making the King a willing instrument for their plans of a sweeping reform of Danish society as a whole. This could be done without violating the constitution by the simple expedient of letting all Royal decrees emanate from the "Cabinet" (the personal secretariat of the King) over the heads of the chiefs of the various departments and "collegiums" who previously had the administration in hand. Since this was done in the name of the King, the "Excellencies" had no power to prevent a change that made them superfluous and led to many of them being deprived of office.

This "Cabinet Government" lasted from September 1770 to January 1772, in which period more than 2000 "Cabinet Orders" appeared. Some of them aimed at consolidating the new system. Thus the departments and collegiums were forbidden to correspond with each other in writing; all applications to the King had to pass via the Cabinet, and the old State Council was abolished. But in general Struensee aimed at nothing less than putting the philosophical ideas of the Enlightenment into political practice through a unique social experiment that could only be performed in a country with an absolute monarch who was quite unfit to govern. Thus one of the first cabinet orders introduced the unlimited freedom of the press (1770 September 14). It was hailed both at home and abroad as a victory for all progressive ideas.

Other civil rights were promoted by orders preventing the police from searching houses without court warrants, and from subjecting criminals to painful examination. In the economic field the prevailing mercantilistic principles were abandoned; unprofitable industries were deprived of state subventions, and several economic departments were combined into a central body. The situation of the peasants was also improved by a

decree defining and limiting the system of villeinage which was already recognized as one of the principal obstacles to the agricultural reforms which had been eagerly discussed in the reign of Frederik V. Everything considered, Struensee's reforms were a grandiose attempt to liberalise and modernise public life; but it had no truly democratic features. On the contrary, it presupposed the absolute monarchy and led to a more centralised government than any previous system of administration.

In the first months of Struensee's reign the Society as such was not affected by his policy; but many of its members occupied high positions in the old administration and would follow the course of events with apprehension or approval. At least one among them was directly involved, the Attorney General Henrik Stampe, who seems to have taken an active hand in the reforms of the judicial procedures. However, before the year was out, the change of the administration struck at the very basis of the Society. On December 27 (1770) Thott was sacked by Struensee. Being relieved of all his official functions, he also ceased to be President of the Society.

What this implied was by no means clear. Would the government appoint a new President? Or could the Society continue without being led and supported by a state official of high rank with access to the King? But the uncertainty was soon dispelled. On 1771 January 9 a letter written in French in the King's own hand instructed a secretary in the Cabinet to send the following letter (written in German) to the Society [Lomh. I, 108].

Since I shall not be willing in the future to appoint a President for the Society of Sciences, although I shall be pleased to see that everything is done as well as possible for the flourishing and extension of the sciences, the Society of Sciences must as soon as possible make a plan for this purpose and submit it to my closer evaluation and decision.

Christian/A. Schumacher

This step was obviously a part of Struensee's campaign against the "Excellencies", but – considering his liberal and scientific interests – hardly an attempt to harm the Society, where it nevertheless caused some consternation.

It was now left to Hielmstjerne as Secretary (and by far the senior member) to take steps to comply with the Royal command. Already three days later he addressed a circular letter to those members that were present in the city, asking them to state their opinions on the form and content of a reply. The result was a veritable brainstorm and a great

variety of proposals, showing that some members wished to reorganize the Society along the lines of the French *Académie des Sciences*, with separate classes of members, *élèves*, etc., while others envisaged a less strict organisation like that of the Royal Society of London. Several members stressed their view of the Society as a free association that should be able to adopt and change its own laws, with the consequence that the reply to the King should contain only general ideas on the promotion of learning, but no detailed rules for procedures and activities. Trying to find a common denominator of all these views, Hielmstierne wrote a draft reply that was circulated and largely agreed upon, so that on March 6 he was able to address a Most Humble Submission of the Society of Sciences to the King.

This document is of considerable interest as the first statement of policy ever made by the members of the Society without the assistance of a highly ranking president. It begins with a historical introduction, describing the foundation of the Society (with a reference to the Royal rescript of 1743 January 11) and its various achievements in the form of several publications, the exploration of Iceland, and the cartographical survey of Denmark, stressing that all this was done on a voluntary basis and without financial remuneration. Then follow the concrete submissions or proposals, among which the following are the most essential [Lomh. I, 117-119].

Firstly, the King is asked to continue as protector of the Society; this is understood in a very literal sense since he is also asked to place a room in one of his palaces at its disposal. This latter request was new and obviously made in order to make it possible to hold meetings also when an absent President was unable to offer his hospitality to the members.

The second request reflects the diverging opinions with respect to the structure of the Society. It only asks that it shall be free to elect its own members at home and abroad, and also to consider a division into classes if this would be convenient; this obviously opened the way for various future solutions of this problem. Finally the Society should be able to elect an *élève* attached to each member; since there was no economic basis for this it was suggested that such *élèves* might be provided with a living in the form of a professorship or another public office, – a rather fanciful idea which may well explain why the Society never acquired this subordinate class of members.

Two other requests very frankly asked the monarch to stay out of the internal business of the Society. Since the King would no longer appoint a President, it was suggested that the Society should elect one of its own

members to serve as director for one year at a time, and also that no royal approbation would be required for the statutes it might adopt. Given the administrative traditions of the country, these were rather candid ideas which would transform the Society from being a kind of government department into a free corporation.

After some rather obvious suggestions about the financial administration of the Society Hielmstjerne ended on a more personal note. Referring to his 26 years' work as an unpaid secretary, he asked that he might be relieved of some of this burden by an assistant secretary with an annual salary of 200 Rbd to be paid by the Society itself, and to be raised to 300 Rbd when Hielmstjerne finally retired from this office. A possible candidate for this post would be Assessor Jacobi, who was able to write letters in several European languages and well known to the members, who would concur in his nomination.

In this serious matter Hielmstjerne had proved how efficient he could be when the circumstances required swift action. In only two months he had been able to solicit the opinions of most of the core members of the Society, and to condense their views into a petition that clearly attested the common desire to uphold its existence as a free association with recognized rights. A more opinionated monarch might easily have found such frankness unacceptable; but given the liberal attitude of Struensee to cultural matters, and his absolute power over the King, it might be safely assumed that the proposals would not meet with serious objections, so that the Society might confidently look forward to a new start in the near future.

However, there was no immediate reply to the submission, and soon the affairs of the Society were overshadowed by new and fatal political events. Throughout the year 1771 there was an increasing opposition to Struensee's dictatorial policy and a growing sense of scandal at the ways and life of the Court. This led to a conspiracy centred around the Queen Dowager Juliane Marie and her son, the Hereditary Prince Frederik (1753-1805), who had got an excellent Danish education and no doubt would have made a better figure than his half-brother on the throne from which he was excluded by the *Lex Regia*. They were joined by Ove Guldberg (1731-1808), a historian and former tutor of the Prince, the botanist J.T.Holm who had been deprived of his professorship by Struensee, and a few disgruntled officers. After a ball at the court 1772 January 16/17 Juliane Marie ordered the arrest of Struensee, Brandt and the Queen, and later the same night the King signed the necessary documents. A Special Commission was set up to investigate the alleged

crimes of Struensee, who defended himself by maintaining that he had always acted on behalf of and with the consent of the King; but his adulterous relations with the Queen were undeniable, and on this account he was sentenced to death. He and Brandt were executed on April 28 and their quartered bodies barbarously exposed on the wheel and stake to the horrified gaze of the public. After this revolution a new administration was set up, but not quite along former lines. Its central body was a State Council in which the Dowager Queen exerted a considerable influence through her son; but the Royal family wielded even more power through the Cabinet, from which laws and decrees continued to emerge; even the extremely important law of citizenship (1776) prohibiting persons born outside the realm from holding any office within it appeared as a Cabinet Order without previous discussion in the Council.

In all these events the Society was not involved, except that two of its members (Stampe and Luxdorph) served on the commission which passed sentence on Struensee and Brandt. But the troubled period in general, and the lack of a President in particular, made it difficult to maintain a normal activity, although Hielmstjerne did his best to prevent the Society from dissolution. No new members were elected; but papers were submitted now and then and read at occasional meetings, and both in 1772 and 1773 new Prize Essays were announced. The geographical survey of the country was also kept going. But still there was no reply to the Humble Submission of 1771; and it would no doubt have been unwise to press for an answer to a request made by Struensee, many of whose reforms the new government was now busily dismantling, for instance by abolishing the unrestricted freedom of the press.

Actually nothing happened until March 1774, when Hielmstjerne was suddenly informed that the Humble Submission was in the hands of the interim commission which tidied up after Struensee, but that the commissioners deemed themselves to be incompetent in the matters of the Society. This hint was sufficient for Hielmstjerne, who succeeded in setting up a small but high-powered committee to deal with the matter; it consisted of himself and two prominent members of the State Council, – the Prime Minister J.O. Schack-Rathlou (1728-1800) and Count Otto Thott, who had been recalled after the coup in 1772. Six months later the result of their work appeared in the form of a proper Royal Rescript, dated 1774 October 5, signed by the King and countersigned by Thott [Lomh. I, 120-123].

This long-awaited document was, in a way, a parallel to the Royal

Rescript of 1743 by which the Society had been grafted upon the earlier Commission. But there was a truly significant difference: there was no longer any mention of coins or medals. The Rescript was concerned only with "Videnskabernes Selskab" as such, using here the name which from then on became canonical. This implies that the Rescript may be regarded as the first Royal Charter of the Society. As we shall see, its stipulations implied that this was also the last time the affairs of the Society were subjected to legislation.

Considering Hielmstierne's decisive role in the composition of both documents, it is not surprising that the Rescript complied with almost all the proposals of the Humble Submission. First of all the King promised to continue as protector of the Society and to provide it with furnished rooms and fuel at one of his palaces, expecting it to meet here once a week throughout the year; however, from July to September the members would assemble only once a month, since they could be assumed to spend the long vacation on

elaborating those papers they intend to read during the winter, so that there can always be a supply of *Mémoires* to be read, and so that a volume of the *Acta Societatis* can appear every second month.

Obviously the idea that professors must devote their vacations to research is of no recent date. With respect to the composition of the Society the Rescript accords to each member the right to nominate new members provided that they

are possessed of learning and insight into the disciplines which they cultivate in particular, and that no fault is found with their morals and behaviour.

The Society was also permitted to divide (at a future date) its members into three classes for history, mathematics, and natural science respectively, as proposed in the Submission. Further paragraphs stipulate that the annual interest of 1430 Rbd of the total capital of 25,000 Rbd granted over the years by the King must be spent on Prize Medals, publications, copperplates and physical experiments "if they are not too expensive". We notice also that Hielmstierne got more than he had asked for, viz. an annual salary of 300 Rbd (to be paid by the Society), and permission to engage Jacobi as his assistant with the right of succeeding him as secretary. All this was more or less what could be expected; but two other stipulations decided two of the most burning questions regarding the future life of the Society in general. Firstly, it was decreed that it should not elect its own Director as envisaged in the Humble Submission, but have as before a President appointed by the

King. The Rescript states that the history of the Society has shown, in especial during the last three or four years, that a learned society cannot function properly unless it has a

Præses who has not only insight into the sciences, but whose person and office are also of a distinguished nature, giving him access to Us, [so] that he can with sufficient weight persuade the right subjects to join the Society as members and to submit useful, learned and curious *Mémoires* in all sciences; and so it is Our Will that hereafter as before the Society shall have a Præses, the right to whose appointment We reserve for Ourselves.

This decision was against what the Society had proposed; another question is if it was also at variance with what the members really wished since, under the prevailing system of government, it would not be amiss to be represented by a person who had access to the highest authorities of the state.

Secondly, the Rescript also stipulated that such

laws and statutes as Præses and all the members consider to be necessary for the good of the Society may be ordained without Our approbation, so that they can be changed or improved should the occasion arise.

This was without doubt the most important privilege which the Rescript bestowed upon the Society, which was *eo ipso* established as the self-governing body it has been ever since.

Thus the Royal Rescript of 1774 removed any lingering doubt about the continued existence of the Society under Royal patronage. It was read to the members at a meeting 1775 February 10, when Hielmstierne also introduced Jacobi as his assistant; and even if they had no President, the members immediately proceeded to elect nine new colleagues, all of them scientists or engineers, the most prominent being Thomas Bugge. Although the minutes are silent about it, it goes almost without saying that the question of the presidency must also have been discussed. In fact, we know from Luxdorph's private diaries that the members decided to help the King to make his choice by writing a letter to Count Thott, asking him to assume his former office. When Thott asked to be excused for reasons of health, a similar informal invitation was extended to Schack-Rathlou, who also refused. It is probable that these vain attempts induced Hielmstierne to explain the situation to his friends in the government, for on 1776 January 18 a new Royal Letter unexpectedly announced that, despite the Rescript two years earlier, the Society was now free to elect its own president.

This new privilege removed the last obstacle to a complete resurrection of the Society, and at their first meeting on the new premises at the Royal Palace the seventeen members present unanimously chose Hielmstjerne as the Third President of the Society (1776 March 29) for a period of two years; this implied that Jacobi automatically became Secretary, although he was not yet a formal member. At a meeting two weeks later Hielmstjerne graciously accepted the election, although with the modest remark that for the sake of the Society he could have wished that Nature had been less miserly in providing him with insights and gifts that would enable him to live up to his new responsibility. However, the members knew perfectly well what they had done. Hielmstjerne had been their Secretary for 33 years, in the last four of which he had succeeded in carrying the Society through its darkest period into the new day that was now dawning. That he deserved the presidency was obvious; and that he was still able to take initiatives emerged at the same meeting, when he urged the Society to start a new, major project, – the completion and publication of the great dictionary of the Danish language which Langebek had left unfinished at his death the previous year. We shall return to this plan in a later chapter.

Only one question had to be decided before the Society could resume its regular way of life. Pace the memory of Holstein's objections, it was now felt to be necessary to have rules that would define the routine procedures of meetings, elections, and publications, and already at the meeting on April 12 Jacobi had a draft set of such statutes prepared. They were brief and to the point with only five paragraphs concerning the manner of voting (by secret ballot with small balls to be put into a box with two hidden sections), election of members, the office of the President, the weekly meetings from November to May only, and finally the duty of each member to submit every year a paper presenting the results of his recent research. The order of these presentations was to be determined by lot.

The proposals seem to have been adopted in principle, but were also circulated, and several members made useful comments on them in writing. The historian A.G. Carstens wished to insert paragraphs on the prize essays, and on the duty of members to keep silent about evaluations of the answers submitted, and also of the qualifications of persons nominated for membership. A new member, the astronomer J.S. Augustin, stressed that the fewer laws the Society made the better, and both the mathematician Christen Hee and the historian G. Schiöning made the very sensible point that it was unrealistic to ask members

to produce new results at an arbitrary date determined by lot. The economist M. T. Brännich wished to exempt elderly members from the obligation to submit a paper every year, and the astronomer C. C. Lous objected to the duty of being present at each and every meeting, maintaining that it was too boring to listen to many of the papers. The minutes do not show whether these criticisms were discussed at an ordinary meeting; but when the final version of the statutes was entered into the Minute Book, it was clear that many of the comments had been taken into account, although the document was still dated 1776 April 12. In these first statutes of the Society there were now seven sections, the stipulations of which can be summarised as follows [Lomh. I, 128-133].

§ 1 Votes are by ball ballot as in the first draft.

§ 2 A new member must be proposed at a meeting at which a first vote is taken. If there is not a majority of two thirds, the nominee is not elected and cannot be nominated again for two years. A new member cannot take part in a meeting until he has submitted a paper that is suitable to be read and published.

§ 3 The President chairs the meetings, signs the official letters of the Society, and has a casting vote in case the votes of the ordinary members are equally divided. As President for two years may be elected a former President, any other member, and also a distinguished person outside the Society. Of the two candidates who have got the most nominations the President is elected by simple majority.

§ 4 Meetings are held weekly on a predetermined day from November to May. Members must inform the President or Secretary in writing of their absence; the minutes must record the names of those who were present.

§ 5 Each member must read a paper once a year, or at least within each presidential period. Before papers are published they must be properly scrutinised, either verbally at a meeting, or in writing by those who wish to examine them; but no author is obliged to take such criticism into account and is alone responsible for the contents of his paper. At the last meeting in April or the first in November the members must agree upon the order in which they are going to speak during the following season (i.e. this is not to be determined by lot).

§ 6 The subjects of the prize essays in history, mathematics or natural science are announced each year in May, and the eval-

uations of the answers must be ready at the first meeting in the next following winter (i.e. after 18 months).

§ 7 Members are to treat all information about coming nominations, elections and evaluations as confidential until the matters are decided.

These statutes were entered into the Minute Book, but not printed until four years later when they appeared in a small publication, and now provided with an appendix of five more paragraphs regulating the financial business of the Society. They stipulated that all its valuables should be kept in an iron-bound chest with two locks and two keys, so that it could be opened only by the President and the Secretary in common. The President and two elected members form a special Cassa Commission; they advise the Secretary on his administration of the finances and adopt his annual accounts if two elected auditors recommend it.

Such were the first statutes which the Society formulated and adopted as guidelines for its current procedures. They were brief, simple, and to the point; and the wisdom behind them is sufficiently demonstrated by the fact that practically all their essential principles have survived all later changes and additions.

CHAPTER VIII

The Scientific Awakening

Under its new statutes and with a member of long standing and great experience as President the Society entered on a new and fruitful phase of its life. It was also a prosperous period for the country as a whole, whose booming economy was more and more dependent on a large merchant navy trading in the Mediterranean and the West and East Indies. However, this traffic became increasingly disturbed by the hostilities between France and England following in the wake of the American War of Independence, and to protect its shipping interests Denmark entered in 1780 with Sweden and Russia into an alliance of armed neutrality based on the claim that "a free ship carries a free cargo". In support of this policy the navy was greatly extended by numerous ships of the line and fast frigates, which made it the undisputed master of the Baltic and also enabled it to operate along the shipping lines of the great oceans.

In the domestic area the first part of this period was dominated by the attempts of the Cabinet to undo and reverse most of Struensee's reforms. The strong figure in this movement was one of the conspirators of 1772, Ove Guldberg (ennobled in 1777 as Høegh-Guldberg), who was responsible for the repeal of the decree on the freedom of the press. However, the principal problem was the agricultural situation, which had been on the agenda since the 1750's. Here Struensee's limitation of the system of villeinage was repealed in 1773 with a growing dissatisfaction in the countryside as the inevitable result; the right of the landowners arbitrarily to conscript young farmhands to service in the army was also felt as an unjust burden on the peasant population. The government lent very little ear to these complaints, its only initiative being a decree of 1781 on the redistribution of land. It made it possible to collect the scattered fields of the individual farm into a single, connected area, a measure which in the long run resulted in a dissolution of the traditional village system of inhabitation. A member of the Society, the mathematician Niels Morville, contributed to this reform by several papers in the Writings, calculating the amount of arable land, woods, meadows, lakes, etc. in the Danish islands and the north of Jutland (based on the new maps

of the Society), followed in 1791 by a large manual on the mathematical and economic principles of redistribution of land.

These agricultural problems were behind the peaceful coup of 1784 by which the Guldberg administration was overthrown by the young Crown Prince Frederik in collusion with Count Andreas Peter Bernstorff (1735-1797), – a nephew of the former Prime Minister and the architect of the policy of armed neutrality – and Count Christian Ditlev Rewentlow (1748-1827). The new government immediately began to work on a number of projects which had suffered or been shelved during the period of reaction. Most important was the establishment in 1786 of a Royal Commission on the Rights of Peasants, which in the following year resulted in the abolition of the traditional system of often quite barbaric punishments meted out by landowners to their recalcitrant villeins. In 1788 the government repealed the hated decree of 1733 which had forbidden all male members of the rural community between the ages of 9 and 40 to leave their native parish; this so-called “Stavnsbaand” was gradually abolished and disappeared altogether in the year 1800. At the same time the military conscription was taken out of the hands of the landowners, and in 1792 a new decree regulated the amount of work which they were entitled to exact from their copyhold farmers.

While these reforms laid the foundations of a new social and economic order in the countryside, the situation of the academic world remained singularly static, at least as far as the university was concerned. Struensee had had plans of creating a new university in Norway and also of reforming the University of Copenhagen with Gunnerus as his helper; but after his fall in 1772 these projects were abandoned, and the old university statutes of 1732 remained in force. In consequence the scientific disciplines (apart from mathematics) continued their precarious existence as mere auxiliaries to medicine, the only exception being an independent chair of economics and natural history occupied by Morten Brünnich (1737-1827, elected 1769). A university commission under the new government resulted in 1788 in a revision of the statutes; all disciplines were now put on the same footing regardless of their relationship to theology or medicine; but this did not affect the sciences, apart from a vague promise that a lectureship in chemistry would be established.

However, outside the university at least one of Struensee's initiatives survived, owing to a chain of fortuitous events and to the dedication of a young scientist who came later to play an important role in the history of the Society. As a medical student Peter Christian Abildgaard (1740-

1801, elected 1775) had been sent to France for three years on a government grant to study veterinary science at the famous school in Lyons, being destined to play a role in the ongoing combat against the cattle plague which it seemed impossible to eradicate. On his return he pursued his medical career, finding time also for publishing a manual on the care of horses and cattle for the use of farmers (1770). This book came into the hands of the botanist C. C. Oeder, at whose instance Struensee urged Abildgaard to establish a veterinary school connected with the stables of the Royal Castle of Frederiksborg. Struensee's fall would no doubt have killed also this project, had it not been for the outbreak of a serious epidemic of lung disease at the Royal Stables. This caused the Heir Presumptive Prince Frederik to approach Abildgaard, who got permission to erect a veterinary school in Copenhagen, equipped with an anatomical lecture room, a stable for eight horses, and accommodation for himself. By a decree of 1773 January 25 he was granted an annual salary of 2500 Rbd as head of the school and professor of veterinary science.

This story is in many ways typical of the 18th century, when the growing inertia of the universities led to the creation of independent schools every time an emergent need in society made it necessary to develop a scientific discipline which the traditional faculties treated with neglect or contempt. But Abildgaard had wider interests than veterinary science, being deeply interested in science in general and keeping abreast of its latest developments. In consequence he was worried by the situation at the university, from where many students came to attend his lectures. He decided to take action in 1789, when Brännich left Copenhagen, to become director of the silver mines at Kongsberg in Norway, after which his chair was not filled again. This looked as if natural science had lost its last foothold at the university. This bleak prospect caused Abildgaard to found a Danish Natural History Society, which existed from 1789 to 1805 as a kind of alternative university for natural science. The new society arranged lectures on a variety of subjects, with special chairs for botany, zoology and mineralogy, and with proper examinations at the end of the courses. It also published a series of transactions called *Naturhistorie-Selskabets Skrifter* (Writings of the Natural History Society), of which 6 volumes appeared from 1790 to 1802.

Abildgaard's journal was only a single example of the very proliferation of periodicals which marked the last decade of the century as a testimony to the more and more intense intellectual life of the country in all fields. From a scholarly point of view the most successful was the

Museum (later called the Writings of the Scandinavian Literary Society) which was founded in 1796 and soon became an important centre of humanistic activity. In the scientific domain appeared both a Physical Yearbook and a Physico-economic and Medico-chirurgical Library for Denmark and Norway, founded in 1794 by the professor of medicine O.H.Mynster (1772-1818, elected 1808) and later edited by the botanists Carl Gottlob Rafn (1769-1808, elected 1798) and Erik Nissen Viborg (1759-1822, elected 1791), the latter being one of Abildgaard's students and later his successor as head of the Veterinary School. Among the contributors to all these journals were several members of the Society, in which there seems to have been no resentment against their existence, although they no doubt deprived the Writings of a number of contributions. In fact Rafn was already a member when he assumed the editorship of the medical journal, which was also on a single occasion subventioned by the Society by a grant of 100 Rbd (in the year 1800). It is worth noting that it has survived until the present (with a short interruption from 1806 to 1809), when it appears as the Library for Physicians, thus being one of the oldest Danish periodicals.

Turning now to the internal life of the Society after its reconstruction in 1776, we have seen already that its first act under the new Statutes was to elect Hielmstjerne as its Third President. Being re-elected in 1778, he served the Society in this capacity until his death, and at the same time he continued to govern its financial affairs as he had done in his many years as its Secretary. The papers and other belongings of the Society, including the instruments and records of the topographical survey, were also kept at his house, whereas the meetings now took place on the new premises at the Royal Palace. As it could be expected, Hielmstjerne took his task very seriously, presiding at all the meetings (with one single exception) and showing at least one special initiative of far-reaching consequences (see Chapter IX).

When Hielmstjerne died in 1780, the Society lost the last of its founding members. He had served it for 38 years in all possible capacities as secretary, treasurer, archivist, editor and president. It would clearly be impossible to find a successor of the same competence and experience. However, the problem found a surprisingly easy solution at a meeting 1780 November 5. Here the secretary Jacobi first made a fine speech commemorating Hielmstjerne's life and work, after which the Society unanimously elected Bolle Villum Luxdorph as its Fourth President. Having been a member since 1750, he was one of the senior figures of the Society and well acquainted with much of its business. No one

seems to have objected to his not being a scholar. Essentially he was a lawyer in the service of the Danish Department, where he was First Deputy Secretary. In consequence his election assured the continued connection between the Department and the Society.

Luxdorph was much interested in literary criticism and himself a minor poet – Klopstock called him *un Milton manqué* – of whom it has been said that “behind the Humanist there was an old-fashioned Christian, and behind the book-worm a childish lover of summer, flowers, and young people”. It was soon clear that he would not enjoy the same authority as his predecessors. But he faithfully attended all the meetings, recording the proceedings in his Diary, which he kept from 1745 until his death, and initiating at least one administrative reform of lasting importance: Already at his first meeting as President he proposed that the financial business of the Society should not be handled by the President, but by the Secretary, whose annual account should be presented to the plenum of the Society, while a special Cassa Commission headed by the President had the final responsibility for the economy. The adoption of this proposal made it necessary to add five extra paragraphs to the Statutes of 1776. A printed edition of the complete set of Statutes was given to all the members at a meeting in January 1777, at the same time as an iron-bound chest for the valuables of the Society was acquired; it had two locks with different keys and could only be opened by the President and Secretary together. It may be worth mentioning that the three successive Presidents, Thott, Hielmstierne, and Luxdorph are remembered as three of the four most famous book-collectors of their times (the fourth being P.F.Suhm). Count Thott’s Library of well over 150,000 books was partly acquired by the Royal Library by bequest or at the auction after his death.

Luxdorph was also commemorated by Jacobi in a speech at the first meeting after his death in 1788; but here it was also disclosed that the election of his successor would be a more problematic affair than the previous ones. Some of the members felt that the next President ought to be a scholar chosen from among their own midst, and the botanist Holmskiöld actually proposed Suhm as a worthy candidate. Others still preferred to have a President belonging to the higher strata of society. At the ensuing ballot most of the votes fell on Count Bernstorff; although he was neither an ordinary nor an honorary member, his role as leader of the government and a driving force in its reform policy would naturally underline the lofty status of the Society. On the other hand his many other duties often prevented him from presiding at the meetings, so that

his presidency inaugurated the rather long period of time in which the role of the President became more and more figurative while the office of the Secretary grew in importance.

Under the three Presidents mentioned in this chapter the Society had the good fortune of having only one Secretary who secured, through his many years in office, a certain continuity in the handling of its affairs. Christian Frederik Jacobi (1739-1810) had been introduced to the Society in 1771 as paid assistant to Hielmstjerne, who felt unable to cope with all the many tasks of the Secretary. It is true that Brünnich had protested against this innovation and modestly proposed himself for the new post. Nevertheless, Hielmstjerne explicitly mentioned Jacobi as his assistant in the Most Humble Submission of 1771 and got away with it in spite of a written complaint from Kratzenstein [Lomh. I, 516].

This unfortunate beginning of his career gave Jacobi a rather precarious position in the Society. He was never nominated for membership but always treated as a mere salaried official and even regarded with a certain animosity by some of the members. This feeling increased in 1776, when Hielmstjerne kept Jacobi on as the regular Secretary of the Society. Jacobi no doubt suffered from this unhappy state of affairs, and when Luxdorph became President, he immediately offered his resignation, but was persuaded to remain in his office, which was now more clearly defined by the additions to the Statutes. After another twelve years of service he once again asked to be relieved from his duties for reasons of bad health, too much work, and the feeling that he had not the full confidence of the members [Lomh. I, 523]. But this time, too, he was urged to continue, remaining Secretary until 1795, when a complete restructuring of his office took place.

While Jacobi certainly led a rather unhappy life in the Society, it would be wrong to regard him as a bad Secretary. On the contrary, his employment during such a long period in spite of the condescending attitude of some of the members is sufficient proof that he must have been of great value to the Society. Even if he was frequently ill, he succeeded in making the meetings more regular. His administration of the economy was blameless, his meticulous accounts were never met with criticism, and all historians of the Society are indebted to him for his restoration of the minutes from the years 1750 to 1770 which existed only as rather laconic notes made by Hielmstjerne on loose scraps of paper. They were now sorted out and entered into the Minute Book. Here one also finds a long entry showing that at the meeting 1784 November 5 Jacobi presented a detailed survey of the state of the So-

ciety and all its current activities. A similar report appeared in the following year, after which Jacobi stopped this useful innovation.

As Secretary Jacobi was also the editor of the Writings. This series had come to a stop with volume X (1770), and publication was not resumed until after the reconstruction of the Society. Vol. XI appeared in 1777 with a preface explaining the reasons for the delay and apologizing for the fact that only one out of the twelve papers was written by a Danish member. After the completion of Vol. XII (1779) the long connection with the printer of the Royal Orphanage was severed and the Writings transferred to the new publishing house of Søren Gyldendal, which had been established in 1770. Apparently for no other reason than the change of publisher the following five volumes appearing from 1781 to 1799 were announced as the second series of the Writings, with the slightly changed title of New Collection of the Writings of the Royal Danish Society of Sciences. They all show that conspicuous preponderance of scientific papers which had already marked the final volumes of the first series.

In the period after its reconstruction the scholarly and scientific work of the Society can be viewed from two different angles. The Statutes of 1776 had defined no explicit purpose of the Society as such. In consequence it was free to assume its traditional role as an advisory body to the government, pursuing a number of particular investigations at the request of the authorities, usually forwarded through the Danish Department. This work had an occasional character. Sometimes much time was wasted on rather ephemeral matters, while in other cases the Society became involved in projects of more obvious public importance. On the other hand the Society was also meant to promote the individual research of its members; but in this area the Writings reveal a certain slackening of its activity. Relatively few new members were elected, and many of them offered only the more or less obligatory "first paper", leaving it to a comparatively small group of highly active scientists to fill the thinly spaced volumes, while many of the humanistic members found other outlets for their research. But even in the scientific area it is interesting to notice that many of the contributions were sparked off by one of the official projects, some of which we must now rapidly consider.

Much time was given to the problem of finding the longitude at sea. This had been on the agenda of the great seafaring nations for a long time, accentuated by the increasing traffic on the high seas between Europe and its colonies. On such long voyages dead reckoning with log and compass was not sufficiently precise, and many attempts were made

to construct a marine chronometer by which differences of longitude might be found by differences of time, one hour being equivalent to 15° . At last the English clock-maker John Harrison succeeded in constructing such a clock which lost, on a test voyage to Jamaica in 1761, only five seconds in nine weeks, a feat on which the director of the Maritime Office in Copenhagen, Christian Carl Lous (1724-1804, elected 1775), reported in a book which appeared in Danish in 1768. In the following year a Holsatian inventor by the name of Johann Abraham Armand (1732-1819) sent a chronometer of his own construction to Kratzenstein, claiming that it was both better and cheaper than Harrison's, and asking for an opinion. Kratzenstein was impressed but asked for improvements, and after some years of experimentation Armand applied to the King for economic support. The Heir Presumptive Frederik referred the matter to the Society, where it seems to have been forgotten until 1776, when Jacobi took it up. The next year Armand demonstrated two of his chronometers to the Society, which gave them to Bugge (now professor of astronomy) to be tested at the observatory.

For the next ten years this matter was constantly on the agenda of the Society. Bugge found that the chronometers were inferior to Harrison's, but might be improved, and also obtained the promise of an annual salary to Armand if within two years he could produce two satisfactory chronometers. These were ready in 1780 and this time Bugge was satisfied; so at long last the Society proposed to the King (1780 August 31) that Armand be given an annual stipend and a grant enabling him to move from Rendsburg to Copenhagen, – but also that Armand's productions should be tested at sea. It was mentioned explicitly that this could best be done by the young Naval Lieutenant Poul von Løwenørn (1751-1826, elected 1784), who had participated in a French expedition for a similar purpose.

The fact that this proposal was immediately accepted by the government reveals not only the general importance of the matter, but also that the Society had not lost the confidence of the authorities in the preceding, almost inactive years. It responded by establishing a special Longitude Committee consisting of Lous, Bugge, and the mathematician Joachim Michael Geuss (1745-1786, elected 1779). At the same time the government equipped a newly built small frigate called "Prøven" (i.e. The Test) of 14 guns for the expedition, which left Copenhagen in November 1782, calling at Le Havre, Lisbon, Madeira and the Danish colonies in the Caribbean Sea, and returning home in October 1783. Løwenørn's report was submitted to the Society one year later and

published at its expense as an impressive volume of 165 pages in 4° (1786), giving a lively description of the voyage and a wealth of astronomical and other observations. With respect to the chronometers Løwenørn's judgment was positive: They were very useful indeed, although still suffering from imperfections owing to temperature variations; but Løwenørn maintained that these could be removed "without difficulty".

But now things began to go wrong. The Society seems to have regarded its task as completed, and in 1794 Løwenørn complained that the inactivity of the Longitude Commission forced him to re-examine the chronometers himself at the Chart Archives of which he was both the founder and the director. In the year 1800 he finally announced that the Armand chronometers were bad beyond criticism, three years later branding Armand's claims as mere bragging, lies and nonsense [Lomh. III, 146f.]. However, it was not until 1828-1830 that the navy got rid of the 13 chronometers it had acquired from Armand. In the meantime scientific clock-making in Denmark had been put on a solid footing by Urban Jürgensen (1776-1830, elected 1815), who was perhaps the only artisan ever admitted to the Society. He was appointed Royal Chronometer Maker in 1818 and his firm (which still exists in Switzerland) became known all over Europe for its astronomical and maritime clocks.

The chronometer expedition to the Virgin Islands was the most spectacular (and expensive) single project in which the Society became officially involved. But it was not the only one, and some of its other public tasks are not without interest. Several among them were concerned with astronomy and observatories.

On his return from the Transit Expedition Father Hell recommended that his new observatory at Vardø should be maintained. After some hesitation Count Thott agreed, and in 1773-1778 the observatory was once again manned, this time with Ole Nicolai Bützow (1742-1794), who petitioned Prince Frederik for more support in 1776. This matter was referred to the Society, the attitude of which appears from the fact that Bützow had to return two years later. In 1780 he presented his observations to the Danish Department together with a proposal that a new Danish observatory should be built at Odense, where he was professor of mathematics at the Gymnasium. This involved the Society in science policy at the national level; but in 1781 it resolved – influenced by Kratzenstein's poor opinion of Bützow's observations – that such an observatory would be of no value to science as such, and that it would be better to spend public money on state observatories in Iceland or in one of the large cities of Norway. But the Society added that it would be

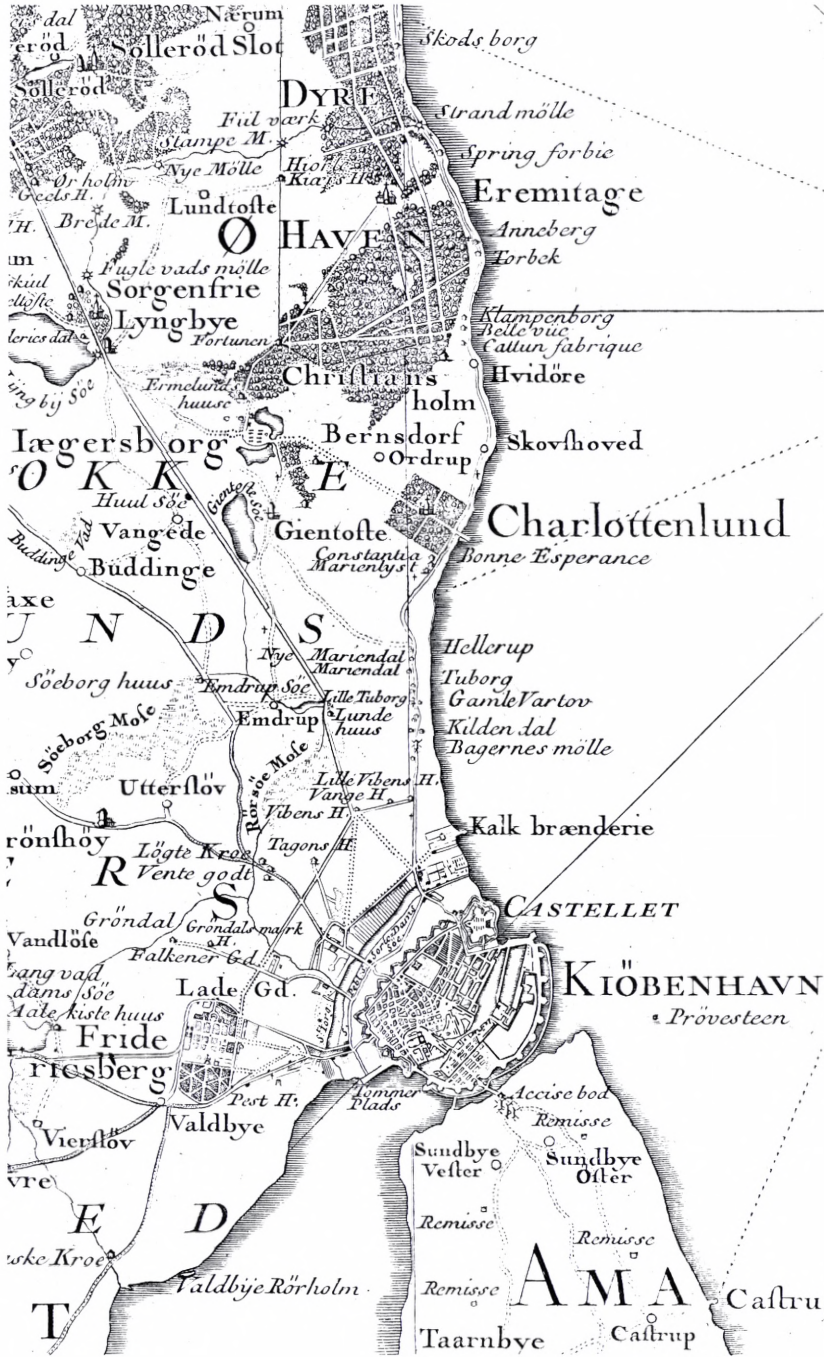
welcome if the Odense Gymnasium could pay for an observatory out of its own pocket since this would create new positions for astronomers, whose future prospects were rather bleak under the prevailing circumstances. Obviously the idea of creating scientific institutions in order to provide scientists with a living was not foreign to the academic establishment of the 18th century. The Vardø observatory was once again on the agenda in 1788, when the Society recommended that this small scientific outpost in the extreme north should be finally abandoned.

In the meantime the Society helped to promote astronomical research in other parts of the realm. On its recommendation the Norwegian Lutheran minister Abraham Pihl (1756-1821, elected 1804) was provided with economic means for his observations which were published by Bugge in the Writings (2nd Series II, 597 f. and III, 327 f. and 526 f.). Similarly the Society took charge of the annual reports from the student Rasmus Lievog, who had been sent to Iceland in 1779 with the title of Astronomer Royal, and it printed a series of observations (2nd Series III, 176 f. and later) made by the missionary Andreas Ginge at an observatory at Godthaab in Greenland, financed jointly by the Danish Department and the Greenland Commercial Company. In 1786 the Society also obtained support for the astronomical observations of the missionary Henning Eberhardt in the distant colony of Tranquebar since – in Bugge’s words –

it will certainly be very noticeable to foreigners and interesting to science to receive observations from a climate where no astronomer has lived until now [Lomh. III, 175].

Meteorological data were also frequently received from correspondents, particularly in Norway, and published in the Writings, while similar data from Copenhagen appeared in the Historical Almanac. In this field the Society also entered upon its first work of international cooperation, accepting in 1781 an invitation from the *Societas Meteorologica Palatina* in Mannheim to coordinate the meteorological observations by means of

The first topographical map of the Society to appear represented the County of Copenhagen, “Measured by Royal Command and verified by trigonometric operations under the direction of the Royal Society of Science”. It was published in 1766 and drawn by the surveyor Ole Christopher Wessel (1744-1794) on the scale of 1:80,000. The section reproduced here shows the fortified City of Copenhagen and its immediate surroundings. (Archive of the Society).



standard instruments, a box of which was sent to Copenhagen and placed at Bugge's disposal at the observatory. Bugge's observations for 1782 – 1788 appeared in the *Ephemerides* of the Mannheim Society, while an extract in Danish was published in the Writings (2nd Series IV (1793) 444-471). Bugge's introduction to the latter publication is worth quoting as a programme for a branch of science that was still in its infancy. He wrote that

If meteorology is ever to attain to any truth; if it may be brought to a scientific form; if the meteorologists should ever be able to discover cycles of the weather and emulate the astronomers by predicting it for the future, – then there can be no other way than to extract the general laws of the weather from this precious and invaluable collection of good, steady and connected observations, made with good instruments at so many different places [Lomh. III, 152f.].

Terrestrial magnetism also occupied several members of the Society, in particular Lous, who reported among other things on the variation of the magnetic declination at Copenhagen over a period of fifty years (2nd Series III (1788) 156ff.) while Ginge examined the influence on the compass of the northern lights which he had plenty of occasions to observe at his observatory in Greenland. Most important were the many magnetic data measured by Løwenørn on his West Indian voyage; they were behind the subject of a Prize Essay announced in 1789 and 1790 (but never answered) about Curves that show the Magnetic Declination at a given Longitude and Latitude. A Prize Essay on the influence on the compass of iron masses in a ship (1793) was also inspired by Løwenørn. Finally a large-scale project by Abildgaard (1791) to measure the magnetic attraction of the earth both near the pole (in Greenland) and near the equator (at Tranquebar) with a new instrument of his own invention was referred to a special committee of the Society, and nothing more was heard of it.

To complete this brief survey of some of the Society's official activities, we must mention an investigation of the gauge rod for measuring the volume of casks and barrels, undertaken at the request of the Danish Department on behalf of both the Customs Office and the City Council of Copenhagen. It occupied the mathematicians of the Society for several years and resulted in the announcement of a Prize Essay in 1793. No less than three answers were received and a rather modest prize of 100 Rbd given to the cartographical surveyor Søren Bruun, who published (without support from the Society) both his Essay and a set of tables to be used with the improved instrument he had described.

All the many projects mentioned above were of course of secondary importance relative to the principal scientific task of the Society, which was now as before the administration of the great topographical survey of Denmark. It had been continued all through the difficult years with the result that the survey of all the principal islands had been completed. After the reconstruction of the Society the time had come for a general attack on the mainland of Jutland. Here the field work was begun in 1777 in three different regions of the peninsula, around Ribe in the south, around Aarhus in the middle, and also in the extreme north. In 1778 the Duchy of Schleswig was also incorporated into the survey. At the same time Niels Morville carried the great triangulation from Funen to Jutland by means of two independent series of triangles, one running north via the islands of Endelave and Samsø, the other westwards with much shorter sights across the Little Belt; from 1779 to 1796 the whole of Jutland and the two southern Duchies were covered with triangles measured by Caspar Wessel.

The general organisation of the project remained in the hands of the Surveying Commission of the Society, which had been headed by Christen Hee since its inception in 1761. He carried on until 1780, when ill health forced him to leave his task to his substitute, Thomas Bugge, who became head of the Commission on Hee's demise in 1782 and remained in this position until his own death in 1815. In this long period much of his time had to be spent on purely administrative duties, among which was the complicated task of providing sufficient money for the work from many different sources. The annual grant from the government was increased several times and also supplemented by subventions from the Society, which made some profits by the sale of the maps. Sometimes also the King would make extra grants for special purposes, and the University too contributed by giving board and lodging to some of the surveyors in one or another of its colleges. Nevertheless, the surveyors were poorly paid, and there were frequent complaints or applications for increases or pre-payments in order to meet the cost of long sojourns and travels in distant parts of the country. Also, the local population was not always kindly disposed towards the surveyors roaming the fields and requisitioning assistance from workmen and farmers. A cheap method of enhancing their authority was found in 1798, when some of the senior members of the staff had their official titles upgraded from "Surveyor" to "Surveying Inspector".

It took more than 25 years to complete the work in Jutland, where the last measurements in the field were made in 1806. In Schleswig the

campaign lasted from 1778 to 1809, while the island of Bornholm was surveyed 1793-1801 with a local triangulation (unconnected with the rest of the country) in 1806. However, the maps began to appear long before the project was finished. Two maps of Funen were published in 1780-1783. Like the previous maps of Sealand they were drawn to the scale of 1:200,000, and the same scale was adopted for the ten partial maps of Jutland which appeared from 1787 to 1805; a general map of the whole peninsula, produced by Bugge to the scale of 1:360,000, had to wait until 1811. [Lomh. IV, 131ff.]. It is difficult to know how many copies were printed and sold by the Society; but there is no doubt that the maps were very much in demand. In fact, several of the copperplates had to be re-worked in the first decade of the 19th century, being worn down with the printing of 3-4000 copies, so that another series of prints could be made.

In a following chapter we shall return to the last phase of the topographical project which continued until 1821, when it was finally completed precisely sixty years after its inauguration.

CHAPTER IX

Words, words, words

The many scientific projects mentioned in the previous chapter might convey the impression that the original concern of the Society with humanistic studies had given way to an exclusive preoccupation with scientific research; but this would be a much too narrow and indeed erroneous view of its activities. For at the same time as the Society was officially surveying the Danish landscape, it was also entrusted with the no less important task of charting the Danish language. Here it followed the example of many other learned societies, several of which had come into being for the purpose of creating national dictionaries. We have already mentioned the *Vocabolario* of the Florentine Accademia della Crusca, which appeared in 1612. Later (in 1639) the Académie Française had begun to collect the material for its *Dictionnaire de la Langue Française*, which was published in 1694 at about the same time as similar projects began to appear in Denmark. Here there were already Latin-Danish and Danish-Latin lexica, compiled in 1622 and 1626 respectively by Poul Jensen Kolding (1581-1640), who was headmaster of the Public School of Herlufsholm and was more occupied with the teaching of Latin than with the promotion of the national language. But towards the end of the 17th century a new departure was made by two notable scholars working independently of one another and with very different ideas on what a national dictionary ought to achieve. They agreed that it should serve the language itself without being a mere tool for translation. But they differed on the question whether such a dictionary should be an empirical description of the language such as it was, or a normative rule for what it ought to be by defining and delimiting a "correct" and acceptable vocabulary, as both the Florentine and the Parisian academies had tried to do.

The former conception was represented by Matthias Moth (1649-1719), who began a private collection of words in Danish already in 1680. During his nine years as First Secretary of the Danish Department (1690-1699) he was able to organize this work on a much larger scale, requesting the bishops to send him lists of words collected by parish priests and ministers all over the country, with special attention to the

vocabularies of the various trades and occupations, including also dialect words. In the twenty years of his retirement he succeeded in organising the resulting material in a huge collection of 23 manuscript volumes in folio, edited on etymological principles and containing also so much factual information that it was both a dictionary and an encyclopedia. It was never printed, but later acquired by the King, and can still be consulted at the Royal Library of Copenhagen as the first empirical survey of the Danish language in both its spoken and literary form. Its importance can be measured by the fact that many thousand quotations from Moth are found in the major Danish Dictionary although its chronological limit was the year 1700.

Also conceived on a grand scale, but independent of Moth's work, were the life-long efforts of Frederik Rostgaard (1671-1745), whom we have already met as one of the first honorary members of the Society. As a young student he had belonged to the circle meeting at Masius's house before he began his exceptionally long version of the Grand Tour. It lasted nine years, during which he became acquainted with almost all the modern tongues of the Continent as well as with Hebrew, Arabic, and the Old Saxon and Old Norse languages. It was during a stay at Cambridge in 1693 that he began to collect the material for a comprehensive dictionary of his mother tongue, a project that kept him occupied all his life, both during a brilliant administrative career and from 1730 in his retirement at his country seat of Krogerup north of the capital. This time the result was twenty manuscript folios.

The problems of making this huge material ready for the press proved to be extremely difficult. Realising that he himself would be unable to finish the project, Rostgaard engaged the young historian Jacob Langebek to revise the manuscript (1737) and persuaded King Christian VI to pay for the printing (1739). In 1740 Langebek submitted a plan of the work which revealed that he had other ideas than Moth, who had tried to describe the language as it was actually used. But Langebek wished to give his dictionary a normative character. It was to contain only terms that were accepted in polite society, whereas

all coarse, rude and lecherous words and ways of speaking must be omitted from the lexicon for the sake of ears polite; for those who do not like them do not need to know them; and those who wish to know them may surely learn them elsewhere [Lomh. III, 219]

"Useless" and "incomprehensible" words were also to be left out, while technical terms of foreign origin might be included "if they had become naturalized and acquired Danish endings." With such principles Lange-

bek was in agreement with the strong, puristic movement among contemporary Danish writers. Moreover he proposed to arrange the entries in strictly alphabetical order, without respect to the etymological considerations which had been the guidelines of Moth's work. In fact, the etymological material should be reduced to a minimum, whereas

all the principal words must be accompanied by good Classical Latin, German and French, but all idiomatic and proverbial expressions perhaps in Latin only, since it would no doubt be too difficult and time-consuming to find German and French equivalents of them all [*ibid.*].

We notice that English seems to lie outside Langebek's horizon, although some of Rostgaard's Anglo-Saxon terms survived in the final version; but this just shows the predominant role of German and French in the prevailing cultural situation, in which even Shakespeare's plays were first introduced in translations made from the German.

Thus from the very first Langebek wished to use the dictionary as a means to influence the development of the Danish language by restricting its acceptable vocabulary. But apart from this normative or "academic" purpose his plan also aimed at reducing the editorial work to a practicable level. As such it was adopted by Rostgaard and approved by Langebek's mentor Hans Gram, and in October 1741 Langebek signed a contract obliging him to deliver 24 sheets per week at a rather meagre payment.

It soon became clear that Langebek had seriously underestimated the amount of work that was entailed by the project, and after three years he complained to Holstein that

with respect to the Danish lexicon it is impossible for me and for anyone else in two or three years to complete a work that is so great and impressive and a labour that is so tedious, unless I may be so remunerated that I can leave everything else out of my hands, in particular since it is a task that would easily occupy a man's whole life, or the hands of ten men if it is to be done in a short time [*Lomh. III, 219*]

When Rostgaard died in the following spring of 1745, Langebek was inclined to abandon the work altogether, stopping half way through the letter K. In the meantime he had founded his own "Little Society", one of the purposes of which was to contribute to the improvement of the Danish language by other means than a dictionary; but it seems that his principal reasons were economic. In fact he wrote again to Holstein 1745 May 12 that he refused to believe

that a King who is so gracious and bountiful and who cares so much for the honour of the nation and the promotion of the Danish language should demand that either I myself or anyone else should be sourly sweating and slaving away for such a poor remuneration [Lomh. III, 220],

adding, however, that he might be persuaded to carry on if certain conditions were fulfilled; among them was a rise of his salary, a stipulation that the work should not interfere with his obligations to the Little Society, and finally that he should be given a suitable preferment when the project was completed after three or four years of work.

This ultimatum caused some consternation in the higher echelons of the project, and Gram immediately wrote a letter to Holstein in defence of his protégé, maintaining that with Rostgaard's material

one poor student has achieved more for our Danish language than a whole society of scholars in France with the *Dictionnaire de l'Académie* and in Florence with the *Dictionario* *(sic)* della Crusca; for in Germany nothing of this kind has been accomplished either by a society or by individual scholars [Lomh. III, 221].

This would seem to be a somewhat exaggerated statement since Langebek had published nothing as yet. What Gram may have had in mind was the fact that Langebek worked alone, but not as a member of an academic team, on a project of a much larger scope than the foreign examples mentioned by Gram. The Florentine *Vocabolario* began as a single volume in 1612, growing to three volumes with its third edition in 1691, and the French *Dictionnaire* of 1694 began its existence as a two-volume work, whereas Langebek possessed material for several volumes, of which he had already edited the first ten letters of the alphabet.

Holstein decided to refer the matter to the Society, which discussed it at meetings on 1745 June 2 and July 15 with the result that Langebek made up his mind to continue the work. But once again his estimate of the time required for its completion was unrealistic. Being appointed Royal Archivist in 1748 as successor to Gram, he became fully occupied with other duties, such as collecting material for a Danish *Diplomatarium*, and in 1753 he informed Holstein that "being only one single human being" he was unable to pursue so many heavy tasks at the same time. But he was now directly in the service of the King, and two years later a Royal letter to the Society dated 1755 March 7 bluntly told Langebek that

in order to bring this lexicon to completion it is Our Most Gracious Will that you abandon the Diplomatic work and once again take

charge of the lexicon, since We shall be Most Graciously pleased if the printing of it can begin before this present year is out [Lomh. III, 223].

However, even this strong injunction was unable to get the project off the ground. Langebek seems simply to have ignored it, continuing to devote most of his work to the great collection of the *Scriptores Rerum Danicarum Medii Aevi*, of which he succeeded in publishing the first three (out of nine) volumes before his death in 1775 as the lasting monument to his industry. He was essentially an antiquarian scholar without strongly philological proclivities, and no longer found time for a project he had begun just to keep body and soul together in his early days as a poor student. And by now his status as a scholar was so enhanced that neither the King nor the Society cared to remind him of this particular obligation. The result was that nothing was heard of the Dictionary for almost twenty years.

The revival of the Dictionary project immediately after the reconstruction of the Society in 1776 must be viewed in the light of the many measures taken by Guldberg's government to promote and develop a feeling of national identity after the Struensee interlude. Among them was a decree dated 1775 May 11 on the curriculum of the Cathedral and other Secondary Schools. It gave the teaching of Danish a previously unknown status, extending it from the simple rules of grammar to a proper study of texts, among which both a Danish History of the World by Guldberg (sic) and the publications of the literary Society for the Beautiful Arts (founded in 1759) were recommended. Also, laws and statutes were now published exclusively in Danish, and on 1776 January 29 the extremely important Law of Citizenship stipulated that (with a few exceptions) only subjects born within the lands of the King were entitled to hold public office in his countries.

Given this new and official recognition of the Danish language, it was only natural that the Society should be involved in its promotion. At least this was the opinion of Hielmstjerne. Speaking at his first meeting as President (1776 April 12) he raised the matter of the Dictionary, and on November 15 he strongly urged the Society to

take charge of the printing and publication of the Danish Dictionary which Councillor Langebek has completed until the letter K, and which was entrusted to the Society by the Royal Rescript of 1757 March 7 [... for ...] in the state in which our mother tongue now is we often lack words and idioms for expressing our most moving emotions with the emphasis we could desire, being often

forced to fall back upon foreign words, – not because our language is poor, but because we have spent more time and energy learning foreign languages than on caring for and enriching our own [Lomh. I, 444 f.].

Continuing with a historical analogy Hielmstjerne argued, – in terms that reveal his puristic inclinations – that

one cannot with indifference consider such scholars as spend most of their time and learning on explaining this or that passage in Homer or Horace, but omit to cultivate their mother tongue: For if the Greeks and Romans had done likewise, concentrating their efforts on explaining the hieroglyphs of Egypt (from where the Greeks got most of their wisdom) – how would the Greek and Roman languages then have fared? So why do we not follow their example, considering that our Nordic languages are not inferior to learned languages (... if they are) cleansed of base, forced or foreign terms [Lomh. III, 225].

With his usual expedience Hielmstjerne already had a plan ready for how the work could be resumed, proposing a clerk from the diocese of Roskilde, Ole Strøm (1726-1782), as Langebek's successor. He was to be assisted by Hans von Aphelen (1719-1779), a Norwegian professor at the University and the teacher of the Crown Prince. The plan was referred to a special Dictionary Commission, comprising the President, the Secretary, Luxdorph, and the historians Carstens, Suhm and Schiöning. Having consulted a number of other members, the Commission presented a final version of the plan already in January 1777. When it was approved by the King on the following April 11, the old project was launched once again; but this time in a way which would make it difficult again to abandon it without damage to the reputation of the Society.

The new plan was introduced by a preface stating that the Society could not tolerate that Langebek's great work remained unfinished, so that "the sleepless nights of this great and patriotic scholar" would be without fruit for the population. But the preface also revealed that the Commission had found it expedient to depart from some of Langebek's original principles as they had been put forward by Hielmstjerne. On Strøm's proposal it was decided that Dr. Johnson's *Dictionary of the English Language* (with etymological explanations in English) from 1755 was to serve as a model for the work, – an interesting indication that Strøm's philological basis was broader than that of his predecessor. But the puristic tendency was underlined by the decision not to use von Aphelen

as assistant editor, since Schiöning and other members suspected him of being too fond of foreign words. For the Dictionary was to be Danish through and through. German and other foreign words must not be included unless they were already current; the etymological explanations should be brief and in Danish; and technical terms known only to particular crafts or trades must be avoided. On the other hand dialect words should be included if they enriched the ordinary language, as should also a number of "beautiful and forceful" old words that "deserved" to be re-introduced. With respect to coarse words Langebek's absolute prohibition was somewhat mitigated; but such words should be provided with the epithet *vulg.* in order to warn the reader against them. In general Langebek's orthography should be followed, and for the sake of brevity no authorities should be quoted, simple references to "Langebek" or "Rostgaard" being sufficient, — a rather disastrous principle which seriously diminished the scholarly value of the work, in particular for scholars outside Copenhagen who could not consult Rostgaard's or Langebek's original manuscripts.

The plan also described the more practical measures by which the project could be carried out. The Society decided to establish a standing Dictionary Commission (with the members already mentioned) to supervise the work of Strøm, and two "able students" were engaged to assist him. It also decided to provide an annual amount of 500 Rbd. out of its own means for salaries and other expenses, whereas the printing costs should be covered letter by letter by a kind of joint venture, the Society paying for four letters, the King for another four, while the remaining letters were apportioned to members of the Royal House, four members of the State Council, and to Hielmstjerne and Suhm [Lomh. III, 231 f.].

Thus at long last the old project was set in motion; but not all the difficulties were removed. Strøm was in a predicament; living at a fair distance from the capital he had to conduct his business with the Dictionary Commission in letters to Jacobi, who was somewhat ill at ease with his own position. More serious was the fact that Strøm often had to sacrifice his own principles at the firm request of the Commission, in which Langebek's more old-fashioned ideas were regarded as inviolable. Strøm complied loyally, but not without protest, in particular against the fatal decision not to present textual evidence for words and phrases. Furthermore, Strøm was born in Norway, and his command of Danish was not as perfect as he himself desired. Finally the situation was aggravated in 1780, when Hielmstjerne's death on July 18 deprived the project of its prime mover. At the same time Strøm lost his best support in

len af Geistlighed. Det er bedre at gaae til Hovedet end til Halen, : man bør hellere holde sig til Herren selv, end til hans Tienere eller Underhavende.

Haleløs, adj. [af Hale og løs.] Som ingen Hale har; rumpeløs. Et haleløst firbenet Dyr.

Haler, v. a. & n. [Alam. *holan*. Angl. *hale*. Belg. & Saxon. *halen*. Germ. *hohlen*. maaskee af Gr. *καλᾶν*, demittere, eller, *ἐλαειν*, trahere.]

1. Trækker langsomt især ved Hiet af et Lov. (Bruges meest med adskillige præp. og adverb. loci.) Lad dem tage fat i Lovet og hale. Nu ere de i Færd med at hale Skibet ind i Havnen. I Morgen vil Skibet hale ud af Bommen. At hale en Bialke op, ned. De maa hale sig frem imellem Skibene. Han kan hale sig op, ned, ad et Lov.

2. Trækker ud; forhaler. (Bruges meest med hen og ud.) Skulde han hale længere med Betalingen, saa maa han støvnes. Han haler det ud, det længste han kan. Hvor længe vil de hale hen med Brylluppet? Det haler hen fra een Dag til en anden.

3. Løber eller farer affted. (Bruges meest i daglig Tale med af, efter og ud.) See! hvor han haler af. Da han kom paa Hesten, halede han efter dem i fuld Gallop. Den Hest kan godt hale ud. Deraf kaldes og i daglig Tale en Person, som i Spil eller andre Udsævelser har en stor Færdighed, en Udhaler.

4. Haler ind, v. a. Bemærker og i daglig Tale: indhenter eller opnaaer ved at fare affted. See til, at du kan hale ham ind, førend han kommer til Byen.

Halestykke (et) n. f. [af Hale og Stykke.] Det Stykke af en Bagtierding, hvorved Halen sidder; et Rumpestykke.

Halet, adj. [af Hale.] Som har en Hale, eller og, en Hale af en vis Bestaaffenhed.

Deraf Forthalet, langhallet, stumphallet, ic.

Halker, v. a. [diminut. af Haler; eller og en forstieftlig Udtale af Ulker.] Trækker frem ad ved et Lov med Langsomhed og Besværlighed. (Bruges meest med frem, og det ofte reciproce.) Matroserne maatte halke Skibet, sig, frem imellem Iisflagerne.

Halle (en) n. f. [Eydsk.] Et Sted, hvor Fabrikoren leverer sit Klæde for at eftersees, at det ikke har Brak eller Feil, men er godt og forsvarligt; hvorfra det og forsynes med Stempel. Dette Stykke Klæde har aldrig været paa Hallen.

Hallend, adj. [maaskee af Hald.] Tør; vissen; fortørret. (Langebet af Refen og Porhus.) Hvoraf de Træer, hvis Toppe ere fortørrede og bortvisnede, kaldes i Skovvæsenet tophallende. See og D. Mag. I. 56.

Halm (en) n. collect. [Anglosk. *Healm*. Alam. Angl. & Belg. *Halm*. maaskee af Lat. *Calamus* f. *Culmus*.] Straae, hvis Ar eller Kierner ere astorske: de Straae, som ikke derved ere brækkede, samles til at tække Huse med, og kaldes Langhalm; de øvrige Straae gives Dvæget til Foder, eller anvendes til andet Brug. Hans Dvæg faaer ikke andet at æde end Halm. At strø under Heste med Halm. At ligge paa Halm. At hielpe een af Dynen i Halmten. See Dyne. At tørste for Halm, eller, Langehalm, : at arbeide meget for liden Fortieneste. (Halm findes og brugt i Steden for Halmfald.) Deraf:

a) **Halmbaand** (et) n. f. Baand, som snoes af Halm til at binde Korn op med paa Marken.

b) **Halmdyne** (en) n. f. Et Dynebaar, som er fyldt med Halm, og lægges paa Bunden af en Seng under Dyrerne, for at ligge desto blødere.

c) **Halmfald** (et) n. f. Et Aar, hvori et Stykke Jord har været indtaget til Sæd,

the Commission in the person of the Royal Archivist A.G. Carstens, who died on the very same day as the President of the Society. Since Strøm had hoped to become his successor (with the help of Hielmstjerne), his personal disappointments grew when another candidate was preferred. However, solaced with the new title of Councillor, Strøm carried on and had the first printed sheets of the letter A ready before the year was out; in recognition of his work the Society elected him to membership without demanding any other contribution from his hands.

A new crisis occurred when Strøm died in 1782, having just finished the letter B. His assistant, the University Librarian Nicolaj Elert (1740-1803), applied for the vacant position and was appointed by the Society without hesitation. Two years later he was able to have the letter B printed, whereas he had to prepare the letter C himself, Rostgaard and Langebek having placed all the relevant words under K or S. A further delay was caused by his editing of a seven-volume catalogue of Count Thott's library (1785-1792). The result was that the first volume of the dictionary did not appear until 1793. It had the title *Dansk Ordbog udgiven under Videnskabernes Selskabs Bestyrelse / Første Tome / A-E* (Danish Dictionary published under the Direction of the Society of Sciences, Vol. I, A-E).

When the reviews began to appear, they were by no means favourable. Thus the very competent philologist Ludvig Heiberg (1760-1818) complained in 1795 that this first volume was without any preface or introduction explaining the principles of the work as a whole. Elert had promised that a plan of the work would appear in the final volume. But "How can it be of any use to know the plan when the work is finished and any annotation aiming at its improvement will come too late?"

A section from the Danish Dictionary of the Society (Vol. II, 1802 p. 504) edited by Nicolai Elert (1740-1803), whose work was not highly appreciated. Actually a comparison of the entry Haler (i.e. hauls or pulls) with the corresponding article in Ordbog over det danske Sprog (VII, 1925) reveals a number of shortcomings. The supposed connection with the Greek terms is unmethodical; several important meanings are missing and the rest listed in an arbitrary way; and the most important historical information, viz. that the word is borrowed from Low German, is omitted. However, both the shaky etymology and the historical ignorance are understandable considering the general state of contemporary philology. On the other hand it has to be admitted that the article provides useful documentary evidence for several current turns of phrase.

[Lomh. III, 246]. Heiberg also blamed the Dictionary Commission and the editors for ignoring the important dictionary of Danish synonyms which Benjamin Georg Sporon (1741-1796) had published in instalments from 1775 to 1792; the fixation on Langebek's work had obviously prevented the Commission from noticing a work that began to appear in the year of his death.

This cool reception seems to have persuaded Elert that something had to be done. In 1796 he resigned from his post as librarian in order to devote all his time to the Dictionary, assisted by Rasmus Nyerup (1759-1829, elected 1823), who became the first professor of literary history in the same year. His other assistant was the Icelandic scholar Jón Ólafsson (1731-1811), who had won the Gold Medal of the Society for a Prize Essay (1782) on ancient Nordic poetry (published by the Society in 1786). Despite new calamities, – a part of the manuscript of the letter F perished in the fire of 1795 – and his own failing health Elert succeeded in publishing the second volume of the Dictionary in 1802. It contained the letters F, G, and H and like its predecessor was without a preface, so that the public was still kept in the dark with respect to the plan of the work.

This time the reviews were even more remorseless. In 1810 the philologist (and later Bishop) Peter Erasmus Müller (1776-1834, elected 1811) branded the new volume as a *rudis indigestaque moles* (a crude and confused heap) of words collected over long ages without an ordering hand. He also complained that classical Danish works of literature had not been properly used, that many current words were missing, and that there were many factual errors in the explanations, particularly of the scientific terms [Lomh. III, 250 f.]. The Dictionary Commission rejected this well-founded criticism as the work of a prejudiced mind and founded upon ignorance of the plan of the work and the difficulty of editing it; with respect to the latter point the Commission preferred to remain silent on the principle of *De mortuis non nisi bene*.

We shall not pursue the later history of the Dictionary in any detail, but only mention a few significant facts. Thus it is interesting to note that despite his severe attack on the project in 1810 P.E. Müller was not only elected a member of the Society in 1811, but also invited to join the Dictionary Commission in the same year. Here he tried to speed up the proceedings with the result that the three next volumes appeared in an exceptionally rapid succession. Volume III (I-L) was published in 1820, provided with a preface by Müller describing the history of the project and the reasons why more provincial and technical terms were now

admitted. It was followed in 1826 by volume IV (M-O) and in 1829 by Volume V (P-R). Then a new delay occurred, due to the poor quality of the manuscript for the letter S, and in 1846 it was seriously discussed whether it was worth while to continue a project the shortcomings of which were so generally admitted. The already famous classical scholar Johan Nicolai Madvig (1804-1886, elected 1833) pointed out that the project "as such is already out of date and, as time goes on, it will increasingly contrast with other literary matters" [Lomh. III, 294]. However, the historian and philologist Christan Molbech (1783-1857, elected 1829), – one of the most active members of the Society – argued that "the most objectionable defect of the work would be to be left unfinished" [Lomh. III, 296].

Admitting the uneven character of the various parts of the Dictionary, Molbech also advised against any radical change of the editorial principles at this advanced stage. In the end it was decided to continue. Volume VI (with the unsatisfactory letter S) appeared in 1848, followed by Volume VII (T-U) in 1863 and, – after the longest delay of all – by the final Volume VIII (V-Z) in 1905. By this time 130 years had passed since the Society had assumed responsibility for the Dictionary, and more than two hundred years after the young Frederik Rostgaard had made his first notes for it.

During this long period, – which no doubt forms a somewhat humiliating record in the general history of national dictionaries – no less than 36 members of the Society had served on the Dictionary Commission, while nineteen chief editors and scores of assistants, clerks, and private contributors had been involved in the actual production of the work [Lomh. III, 309-317]. One may regret that all their efforts did not result in a work in which the Society could take pride without blushing. One of the reasons for this failure is obvious. Langebek was justly famous as an antiquarian of the first rank, but he knew better than anyone else that his philological interests were slender, and that his work on the Dictionary was just a tedious duty, which he had assumed in his student days and later felt unable to give up. The calamity arose when the Society, without second thoughts, transferred his authority as an antiquarian to his work as a philologist, tenaciously sticking to the rules he had laid down even when their insufficiency was realised by all competent scholars. Thus Langebek's fame cast long shadows; but there is no doubt that the long agony of this first great Danish Dictionary served as a healthy warning for posterity. The Society never again tried to start a similar work, leaving it to *Det Danske Sprog- og Litteraturselskab* (The Danish

Society for Language and Literature) to publish the new *Ordbog over det Danske Sprog* (Dictionary of the Danish Language), whose 28 volumes, – edited according to modern principles – appeared with clockwork regularity from 1919 to 1955.

This chapter must conclude with a briefer and sadder story about another linguistic initiative. Already before he joined the Dictionary Commission Jón Ólafsson had begun his copious annotations to the *Glossarium Suio-gothorum*, (1769) in which the Uppsala professor Johan Ihre had described the vocabulary of the Swedish language and its relationships to other tongues. In 1789 Ólafsson applied to the Society for support, and over the next twenty years he received several grants for the continuation of his work. In 1806 a Copenhagen bookseller agreed to publish it, and the printing began. However, most of the printed sheets and much of Ólafsson's manuscript material perished in the bombardment of Copenhagen in 1807; but despite his old age and failing eyesight he succeeded in reconstituting his manuscript, which was given to the Society in 1809. Now printing was delayed, and Ólafsson died in 1811 without having seen the fruits of his research. The project was then shelved until 1824, when his manuscript was given to the philologist Rasmus Kristian Rask (1787-1832, elected 1825), who was one of the founders of comparative philology; but it is not known what use he made of it, and it is now back in the archives of the Society.

CHAPTER X

The Beginning of a new Era

Towards the end of the 18th century there seems to have been a growing feeling among members that the Society did not live up to its obligations. The original inspiration and drive behind the reconstruction of 1776 appeared to have given way to indifference and stagnation. It is true that the two great projects, viz. the topographical survey and the Danish dictionary, were faithfully pursued, although with more energy in the former than in the latter case. But these projects were both in the hands of rather small steering committees comprising only a few of the members, while the majority had no similar work to perform.

Another sign of the general lack of inspiration was the increasing difficulty of getting sufficient material for the Writings, of which only two volumes appeared in the last decade of the century. This was to some extent connected with the fact that new members were admitted only at irregular intervals and in a somewhat haphazard way. Thus a group of four members were elected in 1791, and another group of four in 1796, with only a couple of admissions in between, almost as if the Society was afraid of rejuvenating itself. In consequence the number of members remained almost stable, fluctuating slightly about 30 domestic and half as many foreign members.

One way out of this impasse would have been a broader and more consistent policy of admission. This would have given the Society a more central position within the growing community of scholars and scientists, and would also have ensured a more regular flow of "first papers" to keep the Writings alive. But this remedy does not seem to have been considered. Instead it was assumed that the remedy would be a stricter and more differentiated internal organisation of the Society. At a meeting 1792 October 5 it was

Decided, in order to increase the activity and enterprise of the Society, to meet every Friday, and to divide into three classes for history, physics [i.e. natural science], and mathematics; and in each class to elect a chairman to call the meetings of the class; and that each member of the Society is entitled to attend [meetings of the other classes] and express his opinions [Lomh. I, 133].

Immediately afterwards seven members signed on for the historical, five for the mathematical, and fifteen for the physical class, with Thomas Bugge as a member of both the two latter classes.

This step seems to have been the result of a hasty and spontaneous decision, taken without any preliminary discussion. In consequence it was an open question whether it would be agreeable to the President (who was absent from the meeting) and be compatible with the statutes of 1776. The first question was answered three weeks later, when Count Bernstorff informed the Society that he had no objections to the proposal. With respect to the second question it was thought best to invite all the members to submit their views in writing, and a considerable number of responses were received. The Biblical scholar Herman Treschow (1739-1797, elected 1780) remarked that it would be better to comply with the existing laws than to make new ones, and the naturalist Otto Fabricius (1744-1822, elected 1780) expressed his doubts as to whether new statutes would be held in more respect than the old ones. Bugge profited by the occasion to make the startling proposal that the Society should simply exclude any member who had published nothing for three years, or who had not a total of six publications to his credit. But the old historian Carstens replied that he was now almost 80 years of age and no longer able to do research [Lomholt I, 134-145]. In the end it was decided to refer the whole matter to a special Statute Commission. It was set up in March 1793, with two representatives of each class; but neither the President nor the Secretary was invited to join it, – an interesting and significant indication that a new spirit was taking hold of the ordinary members, who were now prepared more than before to take the responsibility for the affairs of the Society into their own hands.

The new commission worked very quietly and nothing is known about its deliberations until January 1794 when a draft of the new statutes was ready. It could not be discussed immediately since the Society had to spend the following year finding new premises in consequence of the fire that destroyed the Palace of Christiansborg in February 1794. But in 1795 the draft was first circulated and then discussed at four meetings. The final version was submitted to the King, whose approval followed 1795 December 23; a printed version of the statutes was presented to the members in the following month of February. Containing a total of fifteen sections, the new laws were much more detailed than the previous statutes; they also introduced a number of highly significant innovations of obvious importance for the life of the Society [I, 142-147].

First and foremost the Statutes of 1796 confirmed the right of the Society to elect its own President. He should not necessarily be a member, but "a man of distinguished talent and learning and an inhabitant of Copenhagen". He was to be elected for a period of two years (with the possibility of re-election) by a procedure beginning with a general scrutiny resulting in a list of possible candidates. At a later meeting one of the two names heading the list would then be elected by simple majority (§ 8).

Of even greater consequence were the sections dealing with the other officials of the Society. Perhaps influenced by the precarious position of Jacobi, the Statutes now stipulated that "As Secretary is elected (for a period of five years) by simple majority one of the members of the Society who is able to correspond with foreign scholars" (§ 12), besides performing other duties, which are enumerated in great detail. They included the arranging of the meetings, the keeping of the minutes, and the editing of the Writings. In this way the members got control of the most demanding office of the Society. Moreover, the Secretary was now relieved of his previous responsibility for the daily running of the economy. Retaining the Cassa Commission in its former role (§ 15), the Statutes introduced the new office of the Treasurer, a member (although this is not said in so many words) who must keep the books and deliver an annual account of all incomes and expenses. This step was certainly no comment on the work of Jacobi, whose accounts had always been above criticism. It was rather a simple acknowledgement of the fact that all the previous secretarial work would be too much for a member acting as Secretary besides performing his public duties at the university or elsewhere. In the same vein it was also decided that the Secretary should no longer preside at the meetings in the absence of the President; this task was given to the senior member of the Society.

With respect to the meetings the new Statutes upheld the tradition of meeting every Friday from the beginning of November until the middle of May (§ 5). A new section entitled any member to invite two friends to attend the scholastic, but not the business part of a meeting, having previously informed the Secretary of the names of the guests, who were then introduced by the President. As before, the meetings were supposed to be devoted to the reading of papers contributed by the members; here the general desire to stimulate the activity of the Society appears in the stipulation that each member must contribute a paper at least every second year until he had reached a total of six contributions. This section clearly echoed Bugge's proposal several years earlier; but it is worth

noting that his idea of excluding members for inactivity was not adopted. In fact neither these nor any later statutes have provided for exclusions of members. A new feature is the stipulation that before a paper is read, the Secretary must receive a written summary to be published in "The Learned Intelligencer", obviously a special publication, of which no more is said. Non-members may also submit papers to be read and – if approved – awarded a silver medal.

With a few unimportant exceptions these rules have all survived the test of time, whereas the sections concerning the admission of new members and the internal structure of the Society soon proved to be less durable. With respect to the structure of the membership, the very first section of the new Statutes confirmed the already existing division into classes; it was even extended with a fourth class of "speculative philosophy", supplementing the historical, mathematical and physical classes. To this there was no objection, while the procedure of admission occasioned a debate that lingered on for a very long time, giving rise to more amendments to the Statutes than any other question. This followed from a conflict inherent in the statutes after the division into classes. On the one hand the statutes upheld the old tradition that new members should be elected by the Society as a whole. On the other hand it was obvious that the proper forum for evaluating the qualifications of a nominee must be one of the particular classes. Already a few months after the promulgation of the new Statutes this led to the absurd result that two highly qualified scholars like Rasmus Nyerup and Frederik Münter failed to be elected, although the small historical class was unanimously behind them. Perhaps this unreasonable consequence of the new rules may also explain the fact that a few scholars now simply declined to be nominated.

These defects of the new Statutes were removed by two amendments in 1797 and 1810 respectively. They tightened the election procedure by requiring a majority of two thirds at the preliminary ballot in the class, with the further stipulation that the nominee should be asked by the class if he would accept election. If the answer was affirmative, the matter was passed on to a plenary meeting to be dealt with as before. This made it very unlikely that a nominee would not be elected if he had the support of his class. – At the same time the election of honorary members was put into the hands of a special committee, comprising two honorary members and a representative of each of the four classes.

The question is now how the new statutes would influence the life and work of the Society. With regard to the membership we find that

the many debates on the procedure of admission in no way resulted in any significant increase of the actual number of members. This remained remarkably constant; and although the elections continued to take place at rather random intervals, the average annual rate of new admissions fluctuated only slightly, as the following table shows.

Period	Number of years	Elections	Average annual rate
1742-1775	33	53	1.60
1776-1800	24	51	2.13
1801-1815	14	26	1.86
1816-1843	27	57	2.11

The total numbers show that in the first hundred years there was an average of two elections per year; during the following century this rate did not change at all, with the result that in the first two hundred years of its existence the Society elected a total of 402 members (Lomh. I, 291). A definite change of this constant policy did not occur until 1976.

However, this did not imply that the absolute number of members did not change. On the contrary, it rose from an average of 35 in the two decades after the reconstruction to about 43 in the first decades of the 19th century, reaching a maximum of 51 in 1829, and falling again to about 39 in the 1830's. How these changes can be compatible with a more or less constant intake of new members may be seen from the following figures, illustrating the average life span of the members and the age at which they were elected.

		Average span of life	Average age at election	Average years of membership
4 founders	1742	66.8	44.0	21.0
39 members	1742-1769	67.6	44.8	22.8
41 members	1770-1792	66.7	43.6	23.1
18 members	1793-1800	66.7	43.7	23.0
28 members	1801-1815	65.5	40.1	24.4
29 members	1816-1829	67.7	45.3	22.4
13 members	1830-1838	66.6	38.5	28.1

It appears that the average span of life of the members remains remarkably stable over almost a century. On the other hand there is a certain

tendency to elect younger and younger people, with an increase of the absolute number of members as a consequence. The number of foreign members also grew steadily. In 1816 it surpassed the number of domestic members for the first time; a maximum of 74 was reached in 1830 when a decline set in, lasting until 1866, when the numbers began to rise drastically until in 1940, when there were about twice as many foreign as domestic members.

Another question is how the division into classes affected the work of the Society. With regard to the first decades under the new statutes this cannot be answered, since the classes kept no records of their own and the minutes contain very few references to them. The deliberations within the classes seem, with a couple of exceptions, to have been deemed irrelevant to the Society as a whole, and all we have for about half a century is the names of the chairmen of the four classes [Lomh. I, 347 f.].

When Count Bernstorff died in 1797, the Society lost a President who had not been as active as his predecessors, no doubt because of his heavy duties as Prime Minister at a time marked by revolutions and wars in Europe. Nevertheless, at the meeting 1797 November 3 the Secretary honoured his memory by drawing attention to Bernstorff's personal initiative with respect to the philosophical class. With a slightly concealed reference to the growing radicalism in the intellectual circles of the capital, Abildgaard praised him for

extending the field of activity of the Society by including the philosophical disciplines among its other purposes (by) adding a philosophical class to it (...). It is worth noting that Bernstorff favoured this proposal with so much attention at a time when both he and other enlightened people perfectly felt and noticed that certain more recent principles of philosophy, and also its present state, had a very great, but apparently not everywhere salutary influence on religion and morality, and on the order and tranquillity of civic society (...), – a proof of how far removed he was from that partisan and sectarian attitude which marks only narrow souls [Lomh. I, 451].

At the same meeting the new procedure for electing a President was set in motion for the first time. However, this led to no break with the tradition of choosing a President from the higher strata of the administration, since the new Prime Minister, Count Ernst Heinrich Schimmelmann (1747-1831, honorary member since 1796), was unanimously elected. Being re-elected time and again, he remained in office for no less

than 34 years, a record achieved neither before nor since in the annals of the Society. He liked occasionally to preside at the meetings, but it was not his style to take personal initiatives. This reluctance to interfere with the business of the Society meant that the office of the Secretary grew steadily in importance during Schimmelmann's many years in the chair.

Perhaps the most influential section of the Statutes was the stipulation that the Secretary should no longer be an official borrowed from the Danish Department, but a proper member of the Society, elected according to a prescribed procedure. However, already before the new Statutes were promulgated a Royal Rescript dated 1795 December 23 approved that the office was divided between Jacobi and Abildgaard, and when the Statutes came into force in 1796, it was decided that Abildgaard should assume responsibility for the secretarial work as defined in the Statutes, while Jacobi should continue to take care of the finances. So while Jacobi was still called "First Secretary", he really became Treasurer while Abildgaard became the real Secretary in the sense in which this office was described in the Statutes.

We have already met Abildgaard as the able and enterprising founder of both the Veterinary High School and the Natural History Society. It could be expected that the Society would profit from his experience and many international connections. The latter no doubt explains the fact that the number of foreign members increased considerably during his period of office which was cut short by his death in 1801, being too short to allow him to put his own stamp on the affairs of the Society. However, it was Abildgaard who took the first step towards the later separation between the offices of the Secretary and the Editor by making the botanist Carl Gottlob Rafn (1769-1808, elected 1798) responsible for the practical production of the Writings (1799). An immediate effect of this division of labour was a decision to change the typography of all the publications of the Society from the traditional *Fraktur* typefaces to Roman type. There were few earlier examples of Roman in texts in Danish, and under a renewed German influence the *Fraktur* remained the obvious choice for Danish books during the greater part of the 19th century; but of course the change contributed to the internationalization of the Society's Writings although they were still disregarded owing to the use of the national language.

After Abildgaard's death the statutory procedure for electing a Secretary was tried for the first time under Jacobi's direction. At the preliminary scrutiny Thomas Bugge and the physicist and Court Marshall Adam Wilhelm Hauch (1755-1838, elected 1791) came out at the top of



Thomas Bugge (1740-1815) was director of the topographical survey and from 1801 to 1815 the fourth Secretary of the Society. – Mezzotint by Gilles Louis Chrétien after a drawing by Jean Fouquet.

the list, and at the ensuing ballot Bugge was elected by a clear majority as the Fourth Secretary of the Society.

Bugge was now 60 years old and had an unusually active career behind him. Born in a modest walk of life, he had abandoned theology in order to devote himself to the topographical survey. Here he had worked his way up from being a subordinate assistant to Koefoed to becoming the director of the whole project and professor of astronomy at the university. In the Society he had been more active than most other members, formulating and evaluating several highly appropriate prize

essays, demonstrating or examining new instruments, and contributing numerous papers to the Writings. Although somewhat hampered by his many public duties, his astronomical research made his name known in other countries, and both the Royal Society of London and half a dozen other academies opened their doors to him. It was, therefore, a matter of course that he should be the Danish representative at the Paris conference in 1798, where the metric system was first presented to the scientific world, an event on which he soon after published a report.

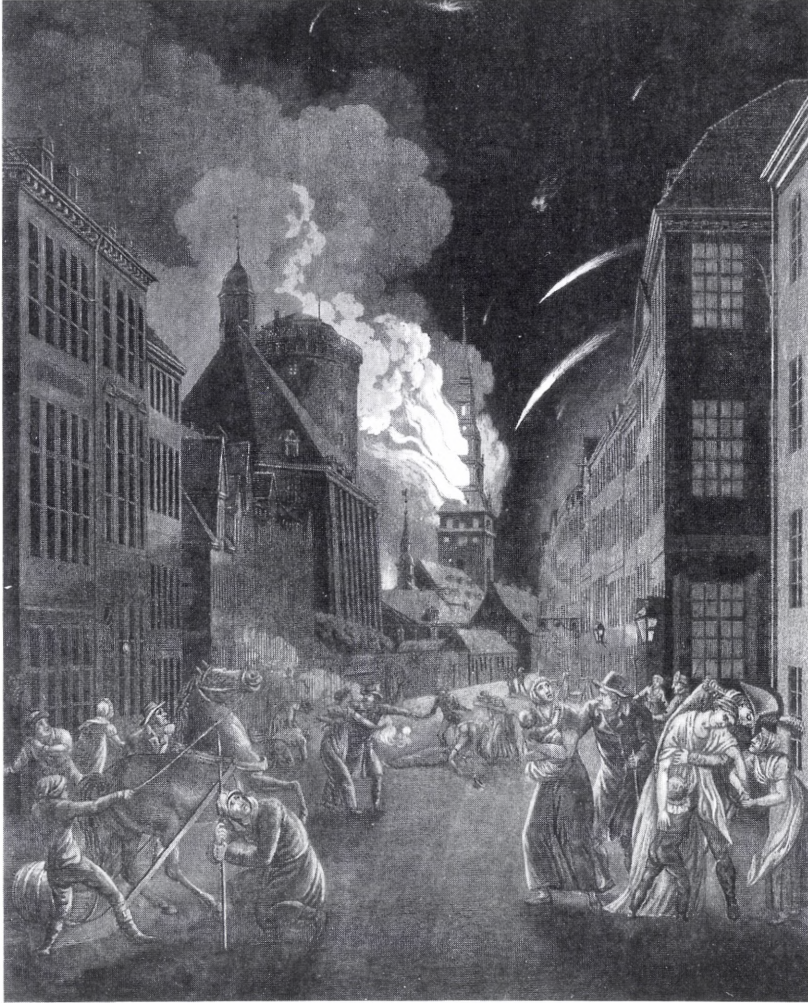
Bugge's administrative experience was immediately felt by the Society. His first act as Secretary was to reform the Book of Minutes. It was more meticulously kept than before, and the often laconic notes from the meetings were replaced by detailed and sometimes rather lengthy summaries of both the business transactions and the papers read by the members. In the same vein he also methodically arranged the archives, devising the method of filing letters and documents which is still used with only slight modifications, with the result that the cumbersome practice of copying all letters into a special book could be abandoned. He never failed to attend a meeting, and it is worth noting that he succeeded in editing five volumes of the New (Second) Series of the Writings, besides collecting all the material for the sixth volume, which did not appear until three years after his death. An editorial innovation was the addition to each volume of a list of books and instruments received by the Society. It was also Bugge's merit that the small annual publications in which the prize essays had been announced since 1793 were now provided with a useful account of all the activities of the Society. After his death this practice was continued with the annual *Oversigt over Selskabets Forhandling* (Survey of the Activities of the Society), which still appears as a most useful publication, containing updated lists of members, summaries of the "contributions" at the meetings, reports on the work of the special commissions, and accounts of the financial affairs. With regard to the economy Bugge also took over the tasks of the Treasurer after Jacobi's death in 1810, renouncing the salary of the Treasurer which he wished to distribute as gratuities to the members of the Dictionary Commission.

Taken separately, such innovations were only small attempts to oil the machinery of the Society; but taken together they show Bugge's earnest concern for its welfare and public image. Otherwise his period as Secretary was not marked by new scholarly or scientific projects. Enterprises on a large scale were out of the question, in consequence of the unfortunate series of disasters which now hit the country with grave reper-

cussions also upon the life of the Society. The incessant wars in Europe, and the British war with France, made the situation of the neutral powers increasingly difficult, not least the seafaring countries around the Baltic. In April 1801 a British fleet under Parker and Nelson arrived to teach them a lesson, defeating the Danish navy (still stripped after the winter) in the Roads of Copenhagen, and six years later the capital was subjected to a three-day bombardment from land and sea by another British expeditionary force (1807 September 2-5). Much of the city went up in flames, and the navy had to be surrendered to the victors. The traditional policy of armed neutrality no longer made sense without a navy and in November the King declared war on Britain, siding from now on with France until Napoleon's defeat at Leipzig in 1813. When peace with the European coalition was concluded at Kiel in January 1814 Norway had to be surrendered to the Swedish Crown. The United Monarchy no longer existed, and Denmark's position as a maritime power came to an end for ever.

In Norway there had for many years been an increasing feeling of national identity, giving rise to both patriotic associations and separatist movements. In an attempt to placate such tendencies King Frederik VI (1808-1839) had at long last decided to establish a national university in the Norwegian capital of Christiania (now Oslo). It was inaugurated 1813 Sept 2 by the Danish Prince Christian (1786-1848), who had become governor of Norway a few months before. This step had a profound influence on the academic and cultural life of the two kingdoms. Many Norwegian born professors left Copenhagen in order to devote their work to their native country, and the usual stream of Norwegian students to Copenhagen began to slow down. However, the Society continued for many years to elect Norwegian members as if nothing had happened, perhaps because the Norwegian Learned Society of 1760 preserved its seat in the distant city of Trondheim, whereas the *Videnskabselskabet i Christiania* (The Society of Science in Christiania) was not founded until 1857.

Prince Christian was the son of the Heir Presumptive Frederik and thus a grandchild of King Frederik V. He had been given an excellent education, his intelligence and cultural interests had been stimulated by among others the Norwegian jurist Christian Colbjørnsen, and on his arrival in Norway he immediately grasped the political situation. He soon became popular and highly respected, and when the Treaty of Kiel became known, all patriotic forces rallied around him. On his initiative an unofficial parliament of 112 representatives of all classes of the pop-



On three successive nights 1807 September 2-4 a British expeditionary force subjected Copenhagen to a heavy bombardment in which more than 14,000 bombs and rockets destroyed large parts of the city, — a new form of warfare against almost defenceless civilians which was universally condemned, even in the Parliament in London. At a meeting of the Society 1807 December 4 Thomas Bugge gave an account of the destruction of his own house with much of the property of the Society (*Writings*, 3rd Series Vol. V, 1-12, and in more detail in the *Book of Minutes*, cf. *Lomholt I*, 534 f.). The picture shows the fire in the Church of Our Lady behind the Round Tower and the Trinity Church that escaped unharmed. —

Print by G. L. Lahde after a drawing by C. W. Eckersberg.

ulation was convened at Eidsvold in April 1814. It declared that the King of Denmark had no authority to cede Norway to Sweden. A constitution was set up, and 1814 May 17 Prince Christian was unanimously elected King of an independent monarchy on a constitutional basis. This dramatic event led to a short, but disastrous war with Sweden, followed by the abdication of the King and, – after strong pressure from the European powers – to the election of the Swedish King Karl XIII as the constitutional monarch of Norway. So while the country lost its newly won independence, it preserved a free constitution enabling it to develop its national heritage without foreign interference.

In Denmark the situation went from bad to worse. Deprived of its navy the country could no longer maintain its overseas trade, and the cost of the war with Britain also led to an economic recession, resulting in an uncontrolled inflation and finally to a complete bankruptcy of the state (1813), followed by much economic and social misery, which it took several decades to overcome.

With respect to the affairs of the Society, not least the bombardment in 1807 had serious effects. Many members were driven from their homes by the fire and many private libraries destroyed. As he reported at a meeting 1807 December 4, Thomas Bugge's house was hit by no less than forty bombs and went up in flames with all his possessions, including 4,000 books. He had also kept the equipment of the topographical survey at home, and it was now destroyed together with a great store of printed maps; the minutes and other documents of the Society for the years 1801-1807 were also irretrievably lost with the consequence that the history of the Society during this period can no longer be reconstructed in any detail.

However, the topographical survey as such did survive. When the military attack on the capital became imminent, Bugge had all the original material, such as the plane table maps and the trigonometrical measurements, and also the copperplates of the finished maps, removed from his house to the Royal Archives which came out of the ordeal unharmed. This meant that the current production of the maps could go on, and in his last years Bugge was also able to supervise the engraving and printing of the last maps, covering Bornholm, the southern counties of Jutland, and the northern part of Schleswig.

Another consequence of the bombardment was a request from the Fire Department that the observatory on the Round Tower should be abandoned and the Tower become a permanent fire station with constant watchers and a great alarm bell. At a meeting 1808 February 12

Bugge related this plan to the Society, which immediately took action to prevent it. After a preliminary debate in the Mathematical Class the members of the Society as a whole signed a petition to the Danish Department, asking that the fire station be located elsewhere. Appealing to the great astronomical traditions of the country, the petition concluded with the words:

The Society of Sciences urgently entreats the Royal Danish Chancery that the only observatory of the two Kingdoms, – saved by the observers from the English fire by the utmost efforts and in danger of life – may be spared from being made completely useless for the pursuit of astronomy. The Society respectfully asks that there may still be a public place devoted to the worship of Urania in a country that takes pride in T. Brahe, C. Longomontanus, O. Rømer, and P. Horrebow, since it is an incontestable truth that a science can never be brought to any useful application if its practice is not united to its theory. [Lomh. I, 536].

This was, as it seems, the first time that the Society interfered with public affairs on its own initiative. The formal response to its eloquent remonstrance is not known; but the plan was shelved and the life of the old observatory prolonged for another half century.

CHAPTER XI

Ørsted's Reign

In January 1815 Bugge informed the Society that he did not wish to be elected Secretary for another five-year period. The question of his successor was put on the agenda of a meeting on January 20; but Bugge died already on January 15, and it was decided to proceed with the election of a new Secretary at the same meeting. This was a somewhat hasty resolution that seems to have caused a certain tension among the members, as one must conclude from what now occurred. At the preliminary scrutiny the Professor of Latin, Børge Riisbrigh Thorlacius (1775-1829, elected 1810), got 10 votes, while the physicist Hans Christian Ørsted (1777-1851, elected 1808) had 18 supporters. Thus there was no doubt that Ørsted would be elected, and it might have been expected that he would have gained the votes of at least some of Thorlacius's supporters. However, at the ensuing ballot no votes were given to Thorlacius, whereas Ørsted was elected without opposition, but now only by 17 votes (sic) (Lomh. I, 540). This strange outcome of the procedure shows that a considerable fraction of the members nourished feelings of doubt with respect to Ørsted's qualifications for his new office. This attitude remained for a number of years. When he came up for re-election in 1820, he was again elected by 17 votes out of 22; but then the hesitations evaporated, and for the rest of his life he was unanimously re-elected every five years. In consequence he served the Society as Secretary for no less than 36 years.

During his long period of office Ørsted showed an unflinching devotion to the affairs of the Society, which under his leadership came to play a more central role than ever before in the scholarly and scientific milieu in Denmark. Its position on the international scene also became more firmly established, not least after Ørsted's sensational discovery of electro-magnetism in 1820, when his name became famous all over the world. At home he acquired over the years a unique and indeed dominant position in many areas of public life during the "Romantic" first half of the 19th century. In fact, no other Secretary of the Society has ever played a similar role as a kind of focal point for the intellectual life of the capital.

Ørsted's many interests and intellectual alertness were apparent already in his formative years. Being the son of an apothecary he studied pharmacology at the university where he passed with distinction in 1797. In the same year he won a Gold Medal for a prize essay on the properties of the amniotic fluid. But already in the previous year he had obtained another university prize for an essay in aesthetics, and now he also came under the influence of the philosopher Børge Riisbrigh (1731-1809, elected 1796), who had introduced the philosophy of Kant in Denmark. The result of this encounter was that Ørsted's thesis for the doctorate (1799) was a treatise defending Kant's *Metaphysische Anfangsgründe der Naturwissenschaft*, but also criticizing Kant for attaching too much weight to experience; for according to the young Ørsted a law of nature can be absolutely valid only if it has an a priori foundation. Finally Ørsted became fascinated with galvanic experiments in the wake of Volta's invention of the electric pile (1800).

Equipped with this mixed intellectual luggage, – and with some galvanic apparatus of his own construction – Ørsted went to Germany in 1801 to work with the physicist J.W. Ritter in Jena on the chemical effects of the electric current. A stay in Berlin made him acquainted also with Fichte, the two brothers Schlegel, and the Norwegian philosopher Henrik Steffens, whose lectures in Copenhagen in 1802 initiated the Romantic movement in Danish literature. In Berlin he also published a book of *Materialien zu einer Chemie des neunzehnten Jahrhunderts*, containing an exposition and defence of the far-fetched chemico-philosophical ideas of the Hungarian chemist Winterl, whom chemists in general regarded as a frivolous fantast. With this publication to his credit Ørsted went to Paris, where he was repelled by the French school of mathematical physics, partly because his meagre knowledge of mathematics prevented him from appreciating them, and partly because the French were not prepared to listen to a Kantian philosopher who rejected, for instance, the atomic theory of matter for purely philosophical reasons.

By now the principal elements of Ørsted's thought were firmly established. They comprised a rejection of the essential role of mathematics in what he, with a Kantian distinction, called "dynamical" (or "chemical") physics as distinct from mechanics. Physics was for Ørsted a series of logically connected experiments designed to disclose the laws of nature in an "immediate" (i.e. non-mathematical) way, whereas mechanics was a mere mathematical description of phenomena on the surface of reality. Behind this was Fichte's idea of the unity of nature as constituted by an all-permeating reason, with the corollaries that the laws of reason and

the laws of nature are one and the same, and that scientific knowledge means that the universal reason "recognizes itself" in the particular phenomena. But modifying his earlier views on Kant, Ørsted now realised that this "recognition" must in practice be *a posteriori* (empirical), because the limited human mind is unable to grasp the universal reason in its totality.

These ideas remained with Ørsted throughout his life. His concept of physical science permeated his *Første Indledning til den almindelige Naturlære* (First introduction to the general doctrine of nature), which dominated the teaching of physics at the university since it appeared in 1811 until long after Ørsted's death. His conviction of the fundamental unity of nature was behind the investigations which led to the discovery in 1820 of the connection between electricity and magnetism. Similarly, his view of science as a disclosure of the universal reason was the point of departure of his numerous popular essays and addresses, later collected in the two volumes of *Aanden i Naturen* (The Spirit in Nature, 1850), which became a classic in Danish literature besides being translated into several other languages. The same idea influenced his attempts to promote the understanding of science outside purely academic circles; one result was the foundation in 1824 of the still existing *Selskab for Naturlærens Udbredelse* (Society for the Promulgation of Natural Science); another was his erection of *Den Polytekniske Lærestalt* (The Polytechnic University) in 1829, where young artisans could study chemical and mechanical engineering at university level. Ørsted also wished to integrate this new centre of higher education with the military schools, but this failed because of the refusal of the officers to mix with mere craftsmen. Instead a *Royal Military High School* was established in 1830 with the result that the country was suddenly provided with a surprising number of new chairs in science and mathematics. Finally one must also remember Ørsted's aesthetic and literary interests, which were behind his many attempts to create a Danish scientific vocabulary; here he continued the efforts of Jens Kraft, and many of the words he invented are still in current use.

When Ørsted returned to Copenhagen in January 1804, the rumour of his philosophical ideas had preceded him. In a letter from Paris the historian Lauritz Engelstoft (1774-1851, elected 1812) told Rasmus Nyerup that Ørsted's *Materialien* had been subjected to a devastating review in England in which the book was branded as "nonsense from one end to the other," as anyone can see without any "need of profound chemical insight or genius, but only ⟨by⟩ mere common sense". At home

Ørsted's views also clashed with the tradition from Jens Kraft, whose French inspiration was shared by the mathematician Johan Nicolai Tents (1738-1807, elected 1787), who had translated Kraft's *Mechanics* into Latin, and also by Thomas Bugge, whose *Første Grunde til den sphæriske og theoretiske Astronomie* (First principles of spherical and theoretical astronomy) from 1796 had aimed at exposing the "first principles of astronomy according to the strict order of the mathematical method", based on Newton's laws that were here for the first time presented to students at the university, whereas they were significantly ignored in Ørsted's textbook of physics in 1811.

Thus Ørsted returned to a scientific milieu which was sceptical about his new philosophical message. This explains why he did not immediately obtain the university position to which he aspired, but had to spend some years as a private and unsalaried lecturer. However, in 1806 he succeeded in being appointed to the new chair of physics within the Faculty of Philosophy which the university had established in order to redress the unhappy state caused by the Statutes of 1732 which had abolished physics as an independent discipline. Trying to overcome the reservations of his scientific colleagues Ørsted already in the following year submitted his first paper to the Society, a treatise on the "acoustical figures" formed by grains of sand on an oscillating membrane. These figures had been discovered by Chladni in 1787 and fascinated Ørsted all his life as a singularly beautiful demonstration of the inherent harmonies in nature. For this paper he was awarded a silver medal and was elected to the Society in 1808, and he was also elected to the Munich Academy in the following year. Ørsted also began his activity in the Society by formulating a Prize Essay on the relations between electricity and magnetism, to signify where his own interests were. The problem was answered by a French contribution which arrived too late to be taken into account.

During his long period of service as Secretary, Ørsted was favoured with a succession of Presidents who never questioned his authority and only rarely interfered with the affairs of the Society. At his election Count Schimmelmann had for several years been a rare guest at the meetings. In the following years he turned up more frequently, only to retire again into his usual benevolent inactivity, dying in 1831 at the age of 83 without having in any way left his personal mark on the Society. He was succeeded by another venerable old man, Adam Wilhelm Hauch (1755-1838, elected 1791), who had been a member for forty years and president of the Physics Class almost as long. He seemed destined to



*Adam Wilhelm Hauch (1755-1838).
Seventh President of the Society
(1831-1838). – Painting
by C. A. Jensen
(in the possession of the Society).*

become a transitional figure in the process which slowly led the Society to abandon its preference for Presidents of high rank in society. On the one hand he was a courtier all his life, but on the other he was also a gentleman scientist who had published respectable papers in the *Writings*, and also a splendidly illustrated work describing his (still extant) private collection of about 800 pieces of scientific instruments. In consequence, the members could regard him as one of their own circle. He became a very conscientious President, chairing most of the meetings, and showing also a personal initiative by initiating a geological project, on which more will be said later.

When Hauch died in 1838, it might have been expected that he would have been succeeded by one of the prominent members of the Society as a signal that the transition had now taken place. But the Secretary had other ideas. Ørsted might without doubt have become President if he had so wished. But he preferred to retain his powerful, although formally secondary position, and suggested instead that the next President should be Prince Christian, who was now his personal friend. As soon as this idea was launched, it was impossible to reject it, and at a meeting 1838 March 9 the Prince got 21 out of 23 possible votes. There were some good reasons for this clever move. The Prince had a lofty position in Society, being in fact heir to the throne since his cousin, the old King Frederik VI, was without surviving male issue.

Moreover, he was highly cultivated and genuinely interested in science and the arts which he had pursued in many ways since his abdication from the throne of Norway in 1814 as a brilliant figure in the life of the capital. Finally, it was generally believed that he sympathized with liberal ideas and might be inclined to abandon the absolute monarchy in favour of a free constitution.

One week after his election the Prince presided at a meeting at which he addressed the members with an elegant speech, assuring them of his honest intention

to comply with the wishes of the Society, to try to remove the obstacles that might hinder its activity, and to contribute all I can to the furthering of its purpose (...). Here discoveries and experiences can be announced, ideas proposed, tried, and discussed with all that intellectual maturity and spiritual freedom which must be at home in this circle (...). I am honoured to share in this rich harvest [Lomh. I, 457].

His first act was to ordain a magnificent commemoration of Hauch in the Hall of the University; but his active life as President was cut short when the King died in 1839 and the Prince acceded to the throne as King Christian VIII. From then onwards he only presided at the annual meeting at which the budget was discussed, while other meetings were chaired by one or another of the senior members of the Society.

As soon as Ørsted became Secretary, it was made clear that he was determined on a policy of reform aiming at simplifying the business procedures and making the meetings more attractive. Looking back upon Bugge's period as secretary 1801-1815, Ørsted wrote in 1843 that to the other reasons why the Society was languishing, – that was his personal judgment –

must be added still another, and that the most important, viz. that the meetings were so tediously crammed with small business, in particular unimportant financial matters regarding the Survey and the publication of maps which spoiled many an evening,

adding that

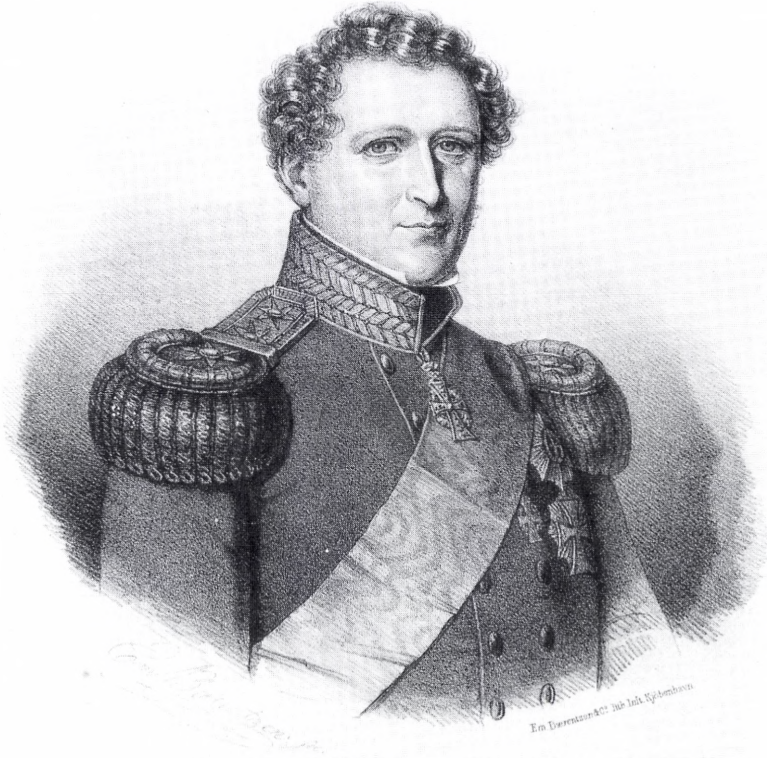
A circumstance which may have contributed in more recent years to making the meetings of the Society more lively may be the fact that the elections are now made with less regard to social status than before and mainly with regard to the ability to pursue the purposes of the Society [Lomh. III, 431].

With respect to the latter circumstance Ørsted gave a correct description of the trend to adopt stricter criteria of membership. Among the 66

ordinary members elected during his period in office there was only a single great landowner without special qualifications, whereas all the others were scholars and scientists of generally acknowledged standing. Most of them belonged to the university or one or the other among the now quite numerous institutions of higher education such as the Technical University and the Royal Schools of veterinary and military science. A few were gentlemen scholars or amateur scientists in holy orders. Also worth noting is the fact that it was during Ørsted's reign that the election of honorary members came to a stop. Foreign members continued to be elected in even greater numbers than before. In this category a total of 105 joined the Society from 1816 to 1852; among them were practically all the most important representatives of any kind of learning.

As for the conduct of the meetings Ørsted tried to get rid of as many irrelevant matters of business as possible, so that the time could be devoted to the reading and discussion of communications from the members. This was achieved by referring as many administrative matters as possible to permanent or interim commissions created for special and well-defined purposes, as we shall see in the following. The finances of the Society as such formed an exception to this rule, but financial discussions were now limited to only two meetings each year. This policy greatly improved the scholarly and scientific character of the meetings; but it also made greater demands on the cooperation and initiative of the members, many of whom were not used to presenting more than the traditional "first paper". In the many cases where sufficient material was not forthcoming Ørsted himself stepped into the breach with an account of one of his own discoveries or investigations or with reports on scientific progress in other countries, submitting over the years more than 125 contributions, a figure with which no other member has ever been able to compete.

One other matter needed immediate attention in 1815. The Statutes of 1796 had divided the offices of the Secretary and the Treasurer. Jacobi had continued to function in the latter capacity until 1808, when Bugge relieved him of a burden that had become too heavy, and after Jacobi's death the Society had formally elected him to be both Treasurer and Secretary for the period 1811-1816. This irregular move was redressed in 1815, when the economist Conrad G.F.E. von Schmidt-Phiseldeck (1770-1832, elected 1806) was elected to be Treasurer. Since then the two offices have always been kept separate. In 1832 Laurits Engelstoft (1774-1851, elected 1812) assumed the office of Treasurer, keeping it until he died in March 1851, five days after Ørsted.



Christian den Ottende,
Konge af Danmark.

Udgivet af Foreningen for Kunstens Opmuntring i Kjøbenhavn.

Christian VIII (1786-1848). King of Denmark 1839-1848 and Eighth President of the Society 1838-1848. — Lithograph by Emil Barentzen from a painting by the same artist, published by the Copenhagen Society for the Encouragement of Art 1842.

Other important changes occurred with regard to the publications. Here Bugge had succeeded in editing and publishing the first five volumes of the Third Series of the Writings. He had also collected the material for a sixth volume covering the period 1809-1812; but the severe economic situation of the country in general and the greatly increased price of paper in particular made it impossible to have it printed; this problem was left to Ørsted, who did not find time and money for it until 1818, when the sixth and final volume of this series appeared.

Already at this time there had been voices advocating a division of the Writings into two separate parts or sections, one of them containing papers from the historical and philosophical, the other contributions from the mathematical and physical classes. At Ørsted's proposal this idea was approved in 1819, mainly for financial reasons; it could be expected that only a few members would wish to receive both sections. Not unexpectedly new delays set in, and the Fourth Series was not launched until 1823, when the first volume of the historical-philosophical papers appeared as a separate volume. It was followed in 1825 by the first volume of the mathematical-physical series. With a total of seven volumes of humanistic contributions and twelve volumes of scientific papers the fourth series came to an end in 1846/47. It was immediately followed by a fifth series of five humanistic volumes (1846-1892) and twelve scientific volumes (1847-1880).

Having started the Fourth Series Ørsted decided to leave the editing of the Writings to a special "Archivist", a new office, for which he proposed the botanist Joachim Frederik Schouw (1789-1852, elected 1823), who was duly elected and re-elected for the rest of his life. Schouw was a man of many parts, being a botanist of international renown, actively interested in meteorology, editor of other journals, and from 1841 Director of the Botanical Gardens. Today he is perhaps best remembered for his political activity. He was a spokesman of liberal ideas and the freedom of the press, and was from 1835 onwards president of one of the new regional, purely consultative parliaments which were gradually paving the way for the constitution which abolished the absolute monarchy in 1849. He was a conscientious editor, and it was also he who established the longstanding connection between the Society and the printing house of Bianco Luno, which has since produced most of its publications.

The creation of this new office relieved the Secretary of a considerable burden of work; but this was not Ørsted's only reason for the innovation. Another was his realizing that the occasional volumes of the Writ-



Hans Christian Ørsted (1777-1851). Fourth Secretary of the Society (1815-1851), painted in 1842 by C.A.Jensen with some of his scientific equipment: a magnetic needle symbolizing the discovery of electromagnetism 1820, the great galvanic battery (behind left), the piezometer for studying the compressibility of water (behind right), and in his left hand a plate with Chladni figures in sand which Ørsted regarded as the most perfect evidence of the inner harmony of nature. – Courtesy of Det nationalhistoriske Museum på Frederiksborg.

ings were not the best vehicle for the current research of the members of a learned society, particularly at a time when several disciplines were in a state of rapid development. There had already been complaint of the long delays of publications, and not long before Bugge's death a special commission had tried to find a remedy by enlarging both the size and the scope of the "Announcements", or "Programme" which he had published since 1803. The result appeared in 1816 as the first volume of an annual publication called *Oversigt over det Kongelige Videnskabernes Selskabs Forhandlinger og dets Medlemmers Arbejder* (Survey of the Transactions of the Royal Society of Sciences and the Works of its Members). It was edited by Ørsted, who kept this task until his death. It has regularly appeared ever since, although with important changes over the years, as the official records of the life and work of the Society.

The first volume of the new publication (in the following called the *Records*) contained a complete list of the members of the Society, summaries of the papers they had contributed to the meetings, and announcements and evaluations of the Prize Essays. From 1842 it also included meteorological observations made in Copenhagen, a practice that stopped with the establishing of a State Institute of Meteorology in 1872. From 1843 a summary of the financial accounts of the Society was also included. The Records were essentially an annual publication although they were sometimes published in instalments throughout the year. Until 1845 they were appended to the Writings so that a volume of these might contain the Records for a number of years, a circumstance which gave rise to criticism of such double publication.

However, what gave the Records their distinctive character was Ørsted's decision that besides all the business and other records of the Society they should also publish summary reports on the current research of the members, even if such research did not lead to formal papers published in the Writings or elsewhere. This transformed the Records into a learned journal in which new results could appear without a delay of more than about one year. In this way they became an instrument or vehicle for current research of a much more efficient nature than the Writings, and there is no doubt that Ørsted considered this to be the most important function of the Records, in which he himself announced practically all his own results before they appeared in foreign scientific journals. On the other hand his stubborn insistence that the Society should stick to its original policy of publishing only in Danish limited the readership of the Records to the Scandinavian countries, at a time when many of the contributions would have appealed to an in-

ternational public. This was repeatedly criticised, but at this point the Secretary was adamant, leaving it to later times to find a way out of this unfortunate isolation.

At the beginning the "Summaries" were brief announcements as they were intended to be. But in the course of time the Records also came to contain long and complete treatises which the authors never tried to publish elsewhere. This made the publications more important from a scholarly and scientific point of view; but it also led to an increasing size of the volumes; towards the end of the century there now and then appeared ungainly tomes of almost one thousand pages, an awkward situation which led to a complete re-structuring of all the publications of the Society in 1917.

Many of the innovations brought about already in the first decade of Ørsted's period as Secretary found no legitimation in the existing Statutes of the Society, and sooner or later it would be necessary to adapt the Statutes to the changing realities. In fact, there exists an undated manuscript (probably from about 1820) in which Ørsted has drafted a new set of statutes in very great detail, with no less than 53 separate sections [Lomh. I, 150-164]. For unknown reasons this document was never discussed, and perhaps not even made known to all members, and the matter was shelved until 1837, when Ørsted read a proposal of several changes of the Statutes. In March 1838 the Statute Commission was revived, and after some astonishingly quick work its proposal was submitted to the members in the following December and adopted with only a few changes at a meeting 1839 February 1. A printed version appeared before long as a separate publication [Lomh. I, 166-171].

Although the Statutes of 1839 clearly reflect the way in which the Society had developed since the previous Statutes were adopted in 1796, the general criterion of membership survived unchanged, as it has done until the present day. Eligible are still men who "could be expected to work for the purposes of the Society" because of their knowledge and their scientific or scholarly spirit (§ 2). Otherwise the conditions are now slightly more lenient. It is no longer necessary to submit a special paper before being elected, and in the same vein the earlier obligation of the members to read a paper at least every second year is silently abandoned. The election procedure is also somewhat simplified.

With respect to the membership the most significant change is that honorary members are no longer mentioned with the consequence that this category of members must now disappear. There is no fixed number of ordinary members, whereas the number of foreign members is not

only limited to 80, but also distributed over the four classes in the somewhat schematic ratio of 32 to the Physical, 24 to the Historical, 16 to the Mathematical, and 8 to the Philosophical classes respectively (§ 8).

The new Statutes define the four officials of the Society – i.e. the President, the Secretary, the Archivist, and the Treasurer – describing their various duties in clear detail (§ 9-12). They are all elected by ballot papers at a meeting in April, for periods of five years, and can be re-elected. However, if a Royal Prince consents to becoming President there shall be no time limit to his period of office (§ 9), – a stipulation that clearly reflects the situation around the election of Prince Christian in 1838.

Among the other sections we note that very little is said about the publications, except that the Secretary is responsible for the Records and the Archivist for the Writings. The division of the latter into the two parallel series is not mentioned. A new section entitles the authors of papers in the Writings to receive fifty offprints free of charge, – on the condition that these copies are not sold (§ 17). Of immediate consequence for the life of the Society is the change of the frequency of the meetings; they shall no longer be held every week, but only every second week from the beginning of November to the end of May, – a decision which legalised what had already been current practice for some time. The meetings must be announced in print by the Secretary (§ 16) according to a plan prepared before the annual season begins, by the Secretary in common with those members who intend to make contributions to the programme (§ 18). The final § 21 is also without counterpart in the previous history of the Society. It stipulates that the Statutes can only be changed by a majority of $\frac{3}{4}$ of the members present at a meeting called four weeks in advance for this purpose.

The latter section obviously aimed at obtaining as much agreement as possible on the general laws of the Society. As such it pointed to a conviction among the members that the Statutes of 1839 would not only adjust the Society to the present conditions but also meet the demands of the future well. This has proved to be the case. There have been several minor changes; but as a whole and with respect to their essential principles the Statutes of 1839 have stood up to the test of time.

In the last decade of Ørsted's period the Society could celebrate the centenary of its foundation. This event gave rise to much public festivity; but it also revealed serious tensions among the members and diverging opinions with respect to the aims and functioning of the old and venerable association. The preparations for the celebration began re-

markably late, and it was an ordinary member, the historian Christian Molbech (1783-1857, elected 1829), who called attention to the forthcoming event in a letter to the Secretary, who put the matter on the agenda of the meeting 1842 January 7. In consequence a special Centenary Commission was established with a member from each of the four Classes, and Ørsted as secretary; Molbech was not included. The Commission proposed, firstly, that the anniversary should be marked by a particularly solemn meeting in the Hall of the University and, secondly, that Molbech should be invited to write a history of the Society during its first hundred years. A third proposal came soon after from the King and President Christian VIII who wished a special gold medal to be coined in commemoration of the event.

The medal got under way first. It was designed by the art historian and Keeper of the Royal Collection of Coins and Medals Peter Oluf Brøndsted (1780-1842, elected 1826) and became in many ways the most harmonious and beautiful of the various medals of the Society. On the obverse was a portrait of the King, surrounded by the inscription CHRISTIANUS VIII REX SOCIETATIS DANICÆ SCIENTIARUM PATRONUS. The reverse showed an allegorical picture of Minerva handing a cup of wisdom to a winged cupid, with the inscription *Genium Alit et Fovet* (She nourishes and fosters the spirit). One medal was struck in gold for the King, twenty were made in silver for members of the Royal family, while all the members of the Society were given a copy in bronze at the anniversary meeting.

The exact date of this meeting was the object of some discussion. The founders of the Society had made their decision to continue their association 1742 November 13; but in his historical account of the first twenty years of the Society the theologian Jens Møller (1779-1833, elected 1814) had argued that the proper date of the foundation must be 1743 January 11 when the project was approved by the Royal Rescript. The question was decided by the King who wrote in a letter to the Society, dated 1842 March 6, that

Since we find in the Minute Books from that time which have been shown to Us that the first members of the Society gathered on this day [November 13] in order to form with the approval of the King a learned Society for the antiquities and history of the Fatherland, We find this to be the most appropriate date for celebrating the jubilee of the Society [Lomh. I, 26].

This Royal verdict removed the uncertainty in a way which was characteristic of Christian VIII in his dealings with the Society; the decisive

event was the initiative taken by the founders, but not the ensuing approval of the Monarch.

Nevertheless, the celebration did not take place on the exact date, but was adjourned to November 25, when a magnificent assembly gathered in the great hall of the new university building that had been erected a few years earlier on the site where the old university had been laid in ruins in 1807. The arrangement was designed to exalt the Royal President, who was placed at the centre of a half-circle, surrounded by members of the Royal House and further out by representatives of the Church, the University, the Army and the Navy, and other public bodies, and finally by the members of the Society along the periphery of the whole group. The principal speech was given by Ørsted, who did not dwell much on the history of the Society, but spoke on the importance and role of learned associations in general. However, he also profited by the occasion to take sides on the delicate question of the language of the publications. Noting that

Most learned societies have revealed their national character by publishing their writings in the proper language of the country, at a time when Latin was still considered to be the most appropriate vehicle for learned works,

he continued by maintaining that

Our Society can also share in this honour (...). The smaller the number is of those who speak and write a language, the more important it is that all forces are united to develop it. The ordinary observer may hardly notice the influence of the Society's zeal for the language; but a closer, impartial investigation will not fail to realise it [Lomh. II, 120 f.].

After this speech no one could be in doubt with respect to Ørsted's ideas on the role of the Society. He was a great patriot and also a great scientist. But when all was said and done, his principal aim as the all-powerful Secretary of the Society was not the promotion of Danish science and scholarship on the international scene, but the promotion of the Danish language at home, as a means of educating his fellow countrymen. Two years later he wrote in an open letter (in reply to an attack in a newspaper) that

In physics I have used the method of exposition that is special to science, trying at the same time to make it as accessible to as many readers as the nature of the matter permits. I have made it as popular and as Danish as I was able to do.

This was no doubt a laudable intention, and Ørsted must be remem-

bered for ever for his constant efforts to instill a scientific component in the general consciousness of the nation. Another matter is that in order to achieve this end he made the Society pay the heavy cost of being linguistically isolated in the learned community as a whole.

Of more lasting interest than the official celebration was the history of the Society, written by the extremely industrious and productive, although not very profound historian and philologist Christian Molbech, who was First Secretary of the Royal Library. It was his own idea to mark the centenary of the Society by an exposition of its history, and he gladly accepted the invitation to write it without ignoring the obvious difficulties of this task; there was no previous work to build upon; practically all the sources were manuscript documents in a not too well organized archive, and the time was extremely short. In consequence, only a first instalment of the work was ready for the anniversary in November 1842, and the complete work was not finished until the spring of 1843, when it was published as an impressive octavo of 618 pages with the title *Det Kongelige Danske Videnskabernes Selskabs Historie i dets første Aarhundrede 1742-1842, Udarbejdet efter Kilderne af C. Molbech, Kiøbenhavn 1843* (History of the Royal Danish Society of Sciences in its First Century 1742-1842, prepared according to the sources by C. Molbech). The history of the Society is dealt with, in four periods of equal length, on the first 514 pages. It is followed by a list of all the members and officials elected until 1842, a list of all the papers printed in the Writings arranged according to subject matter, a chronological list of other publications, a list of the Prize Essays, and a general index. Until the present time Molbech's History remains the only work of its kind.

On the title page of the book Molbech placed the motto *Non ornando, sed probando* (not to praise, but to appraise), and in the preface he made it very clear what his intention was. He would neither uncritically sing the praises of the Society, nor would he content himself with an annalistic record of the events of its life. He would use the prerogative of the historian to express an opinion and pass a judgment provided that the facts are correctly stated, even if

with respect to some important points I have spoken at variance with the prevailing opinion of the majority (...). I was ruled by the conviction that I followed the spirit of the Society by letting the facts speak, and by stating my views on (...) matters of importance for the future life and state of the Society, and to present my opinion about how they are related to its nature and purpose [p. xii].

On such principles Molbech's book became more than a pseudo-objective record. It was also a personal intervention in the current debate on the state of the Society, motivated by his own concern for its future. In this there was of course nothing new. What was new was the fact that the author so frankly admitted it.

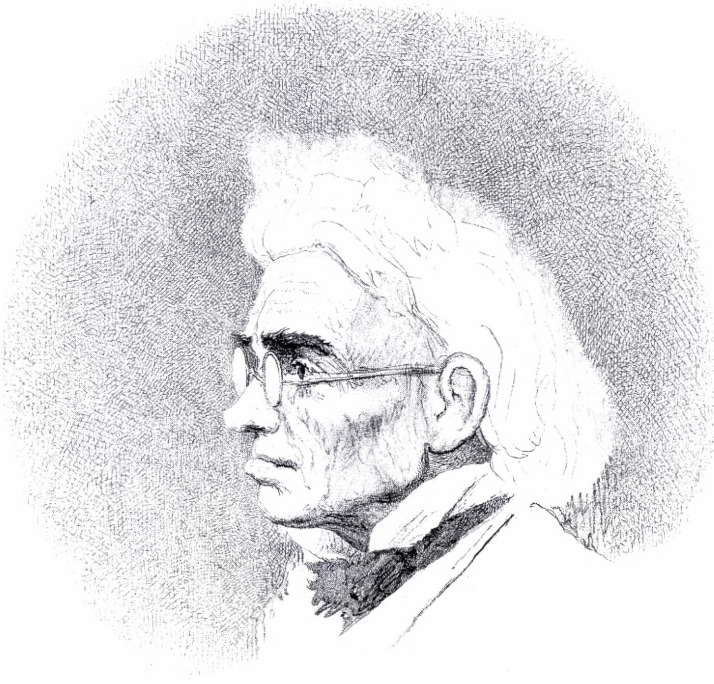
When the first instalment of the History appeared in November 1842, at least some of the members were horrified to discover that Molbech had done nothing to gloss over the shortcomings of the Society, the long periods of inactivity, the difficulty of keeping the publications going, and other rather painful facts. They also noticed his criticism of the financial policy of the 1830's when not only the interest, but also some of the capital had been spent on research. And finally Molbech had severely criticised the new Statutes of 1839 for taking the election of new members out of the hands of the Society in order to let the real decision reside not only with the Classes but with those members of the classes who happened to be present at a particular meeting, punishing absent members by preventing them from voting by letter.

The first known reaction to Molbech's work came from Bishop Jakob Peter Mynster (1775-1854, elected 1819) who wrote a letter to Ørsted about the first instalment of the book, calling it a "chronique scandaleuse (...) yet quite interesting to read" [Lomh. III, 414]. The finished work caused more dissatisfaction, and the Centenary Commission forced Molbech to add a postscript to his Preface stating that

Complying with a request received from the Centenary Commission (...) on the 23rd of April I must hereby declare: that since this historical work is not "revised" either by the Commission, or by other "members of the Society authorized to do so" (...), the author alone is responsible both with respect to matters of fact and to opinions expressed in the work [p. xiv].

On the one hand this was in perfect agreement with Molbech's own attitude; in his Preface he had clearly assumed responsibility for everything in the book. But this meant, on the other hand, that the postscript was uncalled for, and also that it would leave the reader of the History with the impression that the work was in some way suspicious.

However, this was not the end of the affair. Schouw wrote a polemical article against the book in the Copenhagen Weekly *Dansk Ugeskrift*, and 1843 Juni 16 Ørsted himself read a very long and detailed series of Annotations to the History at a meeting of the Society. [Lomh. III, 420-436]. Here he corrected a number of minor errors and mistakes, such as dates of election which Molbech had got wrong. But what made



engraved by J. W. Gertner

engraved by Magn. Petersen

Molbech.

Christian Molbech (1783-1857). The first historian of the Society. – Etching by Magnus Petersen from a drawing by J. W. Gertner. According to tradition it was drawn when the old librarian attended a book auction.

Ørsted's Annotations such a strange and rather painful document are the many examples of the partisan spirit in which he criticised the achievements of earlier members of the Society. Where Molbech had made a few kind remarks about the mathematician Tetens, Ørsted underlined that Jens Kraft had been a much better mathematician; this was true but beside the point. A similarly sour remark was aimed at the philosopher Niels Treschow (1751-1833, elected 1798), who had, it is true, published a very silly paper on elasticity. But the worst of Ørsted's fury was

directed at his predecessor as Secretary. Molbech had enumerated Thomas Bugge's many merits, ending with the fact that

In the Society of Sciences in which he had worked (...) and assisted with his advice for half a century, no one spoke in his memory, no one recorded his life, and not even the slightest commemoration of his achievements was made [Molbech p. 431].

This was of course an indirect criticism of Ørsted, who had not followed the unwritten law of speaking to the memory of his predecessor as Secretary. In the Annotations he explained why, in terms which gave vent to what must have been many years of suppressed resentment, saying that

I sincerely confess that I could never have undertaken this task, since the praise I could sincerely have bestowed on Bugge would easily appear as too scanty in the eyes of the multitude; and this was not irrelevant to me since it was known that he was my enemy for many years [Lomh. III, 425],

adding that he had asked the economist Oluf Christian Olufsen [1763-1833, elected 1814) to speak in his place, but with no result.

Now it is true that Bugge had been sceptical against the young Ørsted, whose philosophy of science was so contrary to his own. It is perhaps understandable that Ørsted had never forgiven him; but it is more difficult to accept that he should also try to blacken Bugge's memory by speaking of his unsatisfactory work as Secretary, and even maintaining, in obscure terms, that now "any expert will declare his scientific work to fall much short of the requirements of his own age", – an accusation to which we shall return in the following chapter.

Molbech replied to Ørsted's Annotations at a meeting 1843 November 3, admitting many of his factual mistakes, but defending his general principles in a quiet and considered way [Lomh. III, 437-447].

Ørsted's Annotations had circulated among some of the members in manuscript copies; but only a few had joined him in the attack. No doubt the only other great historian of the Society was right when he wrote more than a hundred years later that

Perhaps the many members indirectly expressed by their silence (...) their gratitude to Molbech, who had almost alone, and in a very brief time and despite other duties, travels, etc., managed to collect and prepare a very comprehensive and diversified material which had until then remained untouched and unknown to the public [A. Lomholt, *Samlinger til Selskabets Historie* III (1960) 417].

CHAPTER XII

The Society and the World of Nature

The historical and organisational vicissitudes of the Society have told us very little about how it fulfilled its purpose, – the promotion of scholarship and science – in a period which is commonly regarded as the Golden Age of Danish literature and art. This had always been an internal debate in the Society, but it came more clearly to the surface in the wake of Molbech's *History* from 1843. Here Molbech had noticed a general trend of the development of the Society. Its original historical and antiquarian character had given way to a predominantly scientific and mathematical activity. This had begun already around the turn of the century when new philosophical and scientific revolutions began to make an impact on several disciplines. However, in the period when Ørsted was at the helm of the Society Molbech maintained that

this new development has not yet become clearly visible in the historical and philosophical fields since the activity of the Society in these areas has on the whole proved to be on the decline among the members and in the Writings; whereas the scientific, physico-chemical and anatomico-physiological tendency seems to have come more and more to the fore with fresh and lively forces [Molbech, p. xiv].

In his *Annotations* Ørsted was for once of the same opinion, explaining the new tendency as a natural consequence of the great expansion of scientific knowledge, but without discussing whether the humanities had made similar progress. But he also drew attention to another trend towards a predominance of “pure science” over its technical applications, of which his opinion was not too exalted. Ørsted wrote that

In the first six volumes of our Writings from the present century [i.e. the Third Series edited by Bugge] one notices in particular the practical aspect of this [scientific] trend, and one finds a number of treatises that do not properly belong under a learned society; their practical nature consists only in facile applications of science that are not distinguished by original ideas. In the Fourth Series one finds very different characteristics. Apart from two papers (... ..) all the others are of more scientific interest; many of them contain the

seeds of important practical applications, but the scientific character is unmistakable.

However, Ørsted did not agree that the new spirit had not reached the humanities, for

It also seems to me that the philosophical and historical sections of this series are of a more scientific and scholarly nature than the corresponding contributions to the older collection [Lomh. III, 43of.].

Furthermore, Ørsted also discerned a growing interest in interdisciplinary studies, noticing that

in the later period there are more examples than before of one discipline lending a hand to another.

It goes without saying that Ørsted welcomed this development in consequence of his philosophical belief in the ultimate unity of knowledge.

Thus two outstanding representatives of humanistic scholarship and natural science seemed to agree that the situation really had changed. Science was now leading the way with the humanities in a rear position. The question is whether this impression was correct and what evidence there was in its favour. Here the number of volumes in the two sections of the Fourth Series of the Writings is no good indicator. The twelve volumes of scientific versus the seven volumes of humanistic papers show that the Society published more in the former area than in the latter. But this is not a proper measure of what the members of the Society actually achieved, in particular not in the humanistic disciplines, as we are going to see below. One also has to consider the various official projects in which the Society was involved, the special publications appearing under its auspices, and the many papers that the members published elsewhere.

The oldest and most venerable among the great projects of the Society was the topographical survey, which had been almost completed under Thomas Bugge's leadership and was at long last grinding to a halt. At Bugge's death his old assistant Søren Bruun was made Chief Inspector, while the direction of the project was taken over by a new commission, among the members of which were Admiral Löwenørn, the mathematician Carl Ferdinand Degen (1766-1825, elected 1800) and the economist Oluf Christian Olufsen, none of whom had real competence in surveying or geodesy. Fortunately there was not much left to do. All the field work had been completed except in Holstein. Here Caspar Wessel had finished the triangulation before his death in 1819, and in 1821 the remaining surveys were entrusted to Bugge's successor as professor of

astronomy, Heinrich Christian Schumacher (1780-1850, elected 1815). He worked on the project in several periods until he finally gave it up in 1841 without having produced any map, a failure due to his having too many irons in the fire.

In the meantime the Society had wound up its work by publishing maps of Jutland (1820), the southern part of Schleswig (1825), North Schleswig (1836), and finally a general map (in two sheets) of the kingdom of Denmark plus the duchy of Schleswig (1841). The latter map did not include Holstein, where Schumacher's surveying was not finished; for this purely fortuitous reason this map came to play a certain political role in the events leading up to the wars in 1848 and 1864 (on which more will be said in a following chapter) by suggesting that the Danish duchy of Schleswig was more closely attached to the kingdom than the German duchy of Holstein.

As soon as this last map appeared, the Society decided to stop its cartographical activity, and Koefoed's and Bugge's old project came to an end 80 years after its initiation. It had become a truly spectacular achievement, progressing at its slow and majestic pace according to the principles laid down at the beginning, and resulting in a uniform series of beautiful maps giving the first precise picture of the country. As such they have preserved their value, and the Society had good reason to take pride in its work. On the other hand the very fidelity to the original conception of the work during its extremely long period of gestation gave the final product an old-fashioned appearance. Moreover, the maps proved to be useless for military purposes, being essentially "flat" without indicating the hills and valleys of the landscapes or the height above sea level of the various localities. In consequence the General Staff decided to repeat the work in order to remedy these defects. An agreement with the Society in 1830 transferred all future topographical work to the military authorities, and in 1843 the accumulated stock of printed maps was handed over to the new topographical section of the General Staff, where the central figure was a highly competent professor at the Military High School, the mathematician Carl Christopher Georg Andræ (1812-1893, elected 1853).

Unfortunately the topographical survey had an unpleasant aftermath, in which the Society became involved in a way that was not too flattering. In his *Annotations* Ørsted not only gave vent to his animosity towards Thomas Bugge; he also tried to rob him of his scientific reputation, insisting that he had not only used outdated methods of surveying and triangulation, but also that he had been a poor scientist, for

now 28 years after his death any expert will declare his scientific work to be much inferior to the requirements which his own age was entitled to make [Lomh. III, 425].

This was certainly an injurious accusation of a prominent member of the Society who was no longer able to defend himself. On what was it founded? Ørsted himself had no competence at all in geodetic matters, and his vague reference to "any expert" sounds like a rhetorical turn of phrase without any definite meaning.

Here we must remember that after the death of Bugge there was much geodetic activity going on outside the control of the Society, with Schumacher as the central figure. As designated professor of astronomy from 1810 Schumacher had quarrelled with Bugge, among other things about the poor state of the Observatory at the Round Tower, so he also had his own axe to grind. As Bugge's successor he enjoyed the unlimited confidence of King Frederik VI, whose lavish support enabled him to launch several scientific projects of great importance. Among them were the creation of a new observatory at Altona on the very outskirts of the realm and close to the scientific milieu at Hamburg, and also the founding of the immensely influential journal *Astronomische Nachrichten* (1823), which gave Schumacher a prominent position in European astronomy as a whole; this was furthered also by his lifelong personal friendship with his master C. F. Gauss in Göttingen.

Among Schumacher's projects was also the idea of making a new triangulation extending from Holstein to the Skaw (1816). This would serve several purposes. On the one hand it would contribute to determining the exact figure of the earth, on the other it would place Denmark correctly on the map of Europe if it were connected with a similar triangulation which Gauss directed in the neighbouring state of Hanover. In consequence of this undertaking Schumacher was invited to join the Surveying Commission of the Society in 1820; however, he declined for reasons stated in a long letter (in German), in which we find the first general evaluation of the work to which Bugge had dedicated his life. Schumacher wrote that

Our maps were excellent and superior to all others at the time when [the project] was started. But in the long period since that time all topographical work has improved, partly because of better instruments, and partly because the frequent wars have made a true and intelligible mapping of the terrain a necessity, to the degree that one cannot but regard them [the maps of the Society] as outmoded. This is not said to blame them; but it is fortunately the

case that scientific investigations can only avoid becoming out of date if science itself is no longer making progress. Both these circumstances lead to the result that our maps no longer live up to the requirements implied in the words "Published by the Society of Sciences" [Lomh. IV, 7of].

This very negative judgment must have made a deep impression on Ørsted, who no doubt overlooked the fact that Bugge had been a professional geodesist whereas Schumacher was a newcomer to this discipline. But it is also highly probable that in 1843 Ørsted had become acquainted with a memorandum written in 1841 by Andræ for the internal purposes of the General Staff. Andræ had re-measured some of Bugge's triangles in Sealand and examined some of his calculations with the result that he felt obliged to subject Bugge's work to the most scathing criticism. In several cases "Bugge's precision is completely illusory"; the lack of precision "of the determination of the individual sides of the triangles exceeds all permissible bonds", to some extent because of "the incredible carelessness with which Bugge has copied the various measurements", so that "he must lose all confidence as a mathematician".

This harsh judgment was part of Andræ's argument for the necessity of a new triangulation of all the country, which it became his own merit to direct. It is unlikely that he wished it to become common property; but thanks to Ørsted's Annotations the substance of Andræ's accusations survived for more than a century in all accounts of Bugge's life and work, until a revision began only about thirty years ago.

In the years around 1960 Major A.C. Berthelsen located all the remaining material from the topographical and trigonometrical survey, and one of Bugge's successors as director of what was since 1928 the Geodetic Institute, Einar Andersen (1905-1987, elected 1958), began a complete re-examination of the technical part of the old project, assisted by the recently developed electronic computer of the Institute (GIER). His conclusion gave the death-blow to the traditional view: Bugge had performed his work well and with sufficient accuracy for its stated purpose. It is true that it fell short of the precision obtained in later times; but this was unavoidable considering Bugge's more primitive instruments and also the fact that the modern theory of error (using the method of least squares) was unknown to Bugge and his contemporaries. This competent and well-argued vindication of his scientific reputation must now be taken as the last word of this rather painful story. It is here not without interest to quote E. Andersen's final remark about

a very delicate problem that is particularly serious in a small coun-

try where there are no experts in all fields, and where, in consequence, men who are prominent in certain special disciplines are often forced to evaluate the achievements of others in apparently related areas where they run the risk of making wrong decisions, – even if they feel absolutely sure of their judgment.

A new and very different scientific project was adopted in 1831. The occasion was a letter from the Foreign Department about the French artesian wells near Paris which had been studied by an officer of the Royal Engineers. It was discussed at a meeting 1831 April 8, where Ørsted declared that he had already considered the idea of boring such wells in Denmark. A fortnight later the new President, A.W. Hauch, made a formal proposal that the Society should undertake such a project. It was warmly recommended to the Physical Class by Ørsted, and also by the mineralogist Johan Georg Forchhammer (1794-1865, elected 1825), who found that “the Society could not easily find a better way of spending the money at its disposal” [Lomh. III, 347]. In fact, the project was of considerable interest. If it succeeded it would provide the capital with a new source of water, and in any case it would give information about the geological structure of the region. In consequence a special commission was set up, the Cash Commission assumed the economic responsibility, and in June the boring of the well began at a site at the Naval Dockyard (Holmen).

At the end of the first year the well had reached a depth of 134 feet. The drilling continued every summer until 1845, when it was hit by a serious accident, resulting in the loss of several hundred feet of shaft into the hole which was now 602 feet deep. The work was never resumed, and the project was finally abandoned by the Society in 1848. It had been a heavy drain on its economy, the expenditure amounting to no less than 12,000 Rbd., and it had been necessary to make inroads on the capital of the Society, – a fact which was heavily criticized in Molbech’s History in 1843, but defended by Forchhammer. For even if the project had not succeeded in providing water, it had resulted in valuable geological information of a previously unknown nature, a fact which led Forchhammer and his assistant C.G. Hummel (1811-1872) to start new geological borings at Harrestrup in Jutland, and later at other places. This made Forchhammer the pioneer of tertiary geology in Denmark, while his disciple and successor at the university Johannes Frederik Johnstrup (1818-1894, elected 1864) continued his work with his investigation of quaternary formations, demonstrating the influence of the Ice Age in which Forchhammer did not believe.

In 1845 the Society became involved in a scientific project of a greater scope than anything in which it had been previously involved. A letter from its Royal President, dated 1845 May 14 announced that

We have resolved to send the corvette *Galathea* to the East Indian waters, and in particular to the Nicobar Islands that are under Our sovereignty, in order to make scientific investigations of the natural products of these islands and their use for cultivation and commerce, with special regard to the climatic conditions of those individual islands where an establishment might be made [Lomh. III, 361].

This revealed that one of the purposes of the project was to re-establish Danish rule on the Nicobar Islands which had been claimed for the Danish Crown in 1756, but abandoned again because of their unpleasant climate. Another purpose not mentioned here was to hand over the Danish colonies at Tranquebar and Serampore in India to the British East India Company to which they had been sold. But the continuation of the letter revealed that the King had much more in mind; for having completed its mission to the islands the expedition was to call at Bali, Batavia, Singapore, Manila, Hong Kong, and Shanghai, cross the Pacific Ocean to South America, round Cape Horn, and visit Rio de Janeiro, making observations of all kinds of natural phenomena all along its way.

Having already commissioned the officers of the ship to perform the physical, meteorological and astronomical observations, and appointed Professor Wilhelm Behn (1808-1878, elected 1857) at Kiel to direct the zoological research, the King now asked the Society to nominate the other scientific members of the expedition. A special commission established for this purpose met with a refusal from one or two scientists who were too busy at home (among them was Johnstrup), but was able to persuade five other younger naturalists to take part in the adventure; among them were two later members of the Society, the zoologist Johannes Theodor Reinhardt (1816-1882, elected 1856) and the mineralogist Hinrich (sic) Johannes Rink (1819-1893, elected 1864). A final instruction on the work of the expedition was presented to the King already on June 6, and on June 24 the *Galathea* put to sea under the command of Captain Steen Bille (1797-1883), an experienced sailor who later described the progress of his ship in a lively account published in three volumes (1849-1851). Built in 1832, the *Galathea* was one of the best vessels of the navy, and it proved to be excellent for the purpose. Having covered a total distance of almost 50,000 miles it returned safely to Copenhagen at the end of August 1847. It brought with it a rich

harvest of scientific material comprising 93 casks and boxes of natural specimens and 21 boxes of ethnographic material, apart from the collections which had been shipped home during the course of the expedition. When it returned, the Society was asked to supervise the distribution of the material, some of which was sent to Kiel while the main part went to various museums in the capital.

From a political point of view the Galathea expedition was a failure. The government had spent no less than 160,000 Rbd. on a halfhearted attempt to consolidate the Danish presence at the Nicobars, only to abandon the colony again as unprofitable in 1856, leaving it to be occupied by the British a few years later. But the government had spent almost twice this amount on the scientific part of the expedition, and this alone was sufficient to make it an outstanding event in the history of science in Denmark. There is no doubt that it was due to the personal interests and initiative of the King. But that also the Society dealt with the sudden challenge in a resolute and competent way appears from the surprising fact that only ten weeks of hectic preparations were sufficient to prepare and launch the expedition successfully.

Less spectacular than the projects described above were the geophysical investigations in which the Society had been involved already in its early years. As we have seen in a previous chapter, the first scientific contributions to the Writings were J. F. Ramus's two papers on the northern lights, and during the rest of the 18th century meteorological observations arrived from many parts of the widespread lands of the King, together with reports from sea-captains or missionaries in faraway places like Greenland or the tropical colonies. This almost world-wide collection of data accumulated without much order and method, crying for a systematic analysis, – a task which the Society tried to promote from time to time by announcing Prize Essays in meteorology, or terrestrial magnetism, or in both subjects jointly. To the latter category belonged an Essay on "The Connection between the Declination and Inclination of the Magnetic Needle and the Physical Forces of Nature such as Wind, Atmospheric Electricity, Northern Lights, Lightning, Hurricanes, etc." which was announced in 1807, one year before Ørsted became a member, but clearly reflecting his belief in the unity of the forces of nature. But no answer to the problem was received, and most other meteorological Prizes proved to be equally unattractive.

A notable exception to this rule was the Essay for 1821. It had the laconic title "En Dansk Meteorologi" (A Danish Meteorology) and was answered by J. F. Schouw, – the later Editor of the Writings – whose



Section of a chart of the route of the "Galathea"-expedition 1845-1847 showing the South American and Atlantic ports of call. – From Captain Steen Bille's account of the voyage (Copenhagen 1849-1851). The entire map is reproduced in Vol. III, p. 376 of A. Lomholt's Samlinger.

work was published in 1826 with the economic support of the Society as a *Skildring af Vejrligets Tilstand i Danmark* (Description of the Climatic Conditions of Denmark). This became a pioneering work, inaugurating a systematic study of meteorology, which the Society followed up by establishing a Meteorological Commission with A.W. Hauch as chairman (1827). It took steps to institute regular observations of the atmosphere in the capital, and also to provide observers elsewhere with suitable thermometers and barometers. The results were published in the four volumes of the *Collectanea Meteorologica* (1829, 1839, 1845, and 1856) and also in many brief contributions to the Records. Here the observations from Copenhagen were inserted year by year from 1842 to 1874. In this way the Society became responsible for all official meteorology during the first two thirds of the 19th century, – a public service of no mean importance which prepared the way for the foundation of a special Meteorological Institute in 1872.

Also the problems of terrestrial magnetism had been on the agenda for a long time. In the 18th century members like Lous, Løwenørn and Abildgaard had published on this subject in the Writings, chiefly because of its importance for navigation, and several prizes had been offered for essays on geomagnetic matters without resulting in any contributions. In 1809 a new situation emerged when the famous German naturalist Alexander von Humboldt asked the Society for information about the magnetic declination and inclination in Denmark and Norway. This was a part of his project of collecting such data from all over the world, and the first, slender beginnings of international collaboration on a scientific project. Thomas Bugge dealt with the matter and also formulated a Prize Essay for 1810 asking for "Precise Information on the Declination and Inclination of the Magnetic Needle".

This time there was a response. A reply was returned by Ørsted's Norwegian student Christopher Hansteen (1784-1873), who was awarded the Gold Medal of the Society. He was among the Norwegian scholars who left Copenhagen in 1813 in order to establish the new university of Christiania (Oslo). It was here that in 1819 he published his essay in an updated version called *Untersuchungen über den Magnetismus der Erde*, the German language of the publication indicating his realisation of the growing international interest in the subject. His book proved to be a seminal work, inaugurating the modern history of the discipline, and gaining a foreign membership of the Society for Hansteen in 1826.

The real breakthrough of the new discipline came in 1833 with a fundamental treatise by C.F. Gauss in Göttingen. Here he described a

new magnetometer which made it possible (for the first time) to express a non-mechanical quantity in terms of the mechanical units of mass, length, and time. This would enable physicists to attack the problem in a new way by means of precise data provided by the more than twenty magnetic observatories in Europe and their growing number of counterparts in other continents, which Gauss and his collaborator W.E. Weber now organised in an international *Geomagnetic Union* (Der geomagnetische Verein).

On receiving the news of this development Ørsted went to Göttingen to see Gauss, who was already well known to the Society as one of its foreign members (since 1821) and the recipient of a Gold Medal for his mathematical Prize Essay on the theory of surfaces; his close relationship with Schumacher has already been mentioned. The result of this meeting was that Denmark joined the Geomagnetic Union, and that a geomagnetic observatory was established at the Polytechnic High School. It was replaced in 1840 by two other stations in wooden huts on the ramparts of Copenhagen. They were paid for by the King, whereas the Society covered the running expenses, including the salary of the observer Peder Pedersen (1806-1861, elected 1842). Here the magnetic observations were made at regular intervals of time from morning till night all the year round. Two years later the magnetic observatories were placed under the authority of the Meteorological Commission of the Society. From an economic point of view this new undertaking was of a modest size, but otherwise it was the harbinger of a future era. For apart from its purely scientific significance it represented the first case in which Denmark became involved in scientific collaboration on a world-wide scale, owing to the alertness of the Society and its famous Secretary.

The official projects mentioned above by no means exhausted the scientific activity of the Society. In the second quarter of the 19th century its economy had become sufficiently consolidated to allow it to assume the role of a general research foundation. Previously individual research had depended on a small number of financial sources. The University had been able to support its own teachers, although only to a small extent. More abundant means became available to the rapidly developing laboratories of the new Technical High School and similar institutions for veterinary or military science. But otherwise the only means of support were direct grants from the King, or from the general foundation *Ad usus publicos* which King Frederik V had established in 1765. We cannot here list all the cases in which the Society was able to assist individual scholars; but it is interesting to observe the various

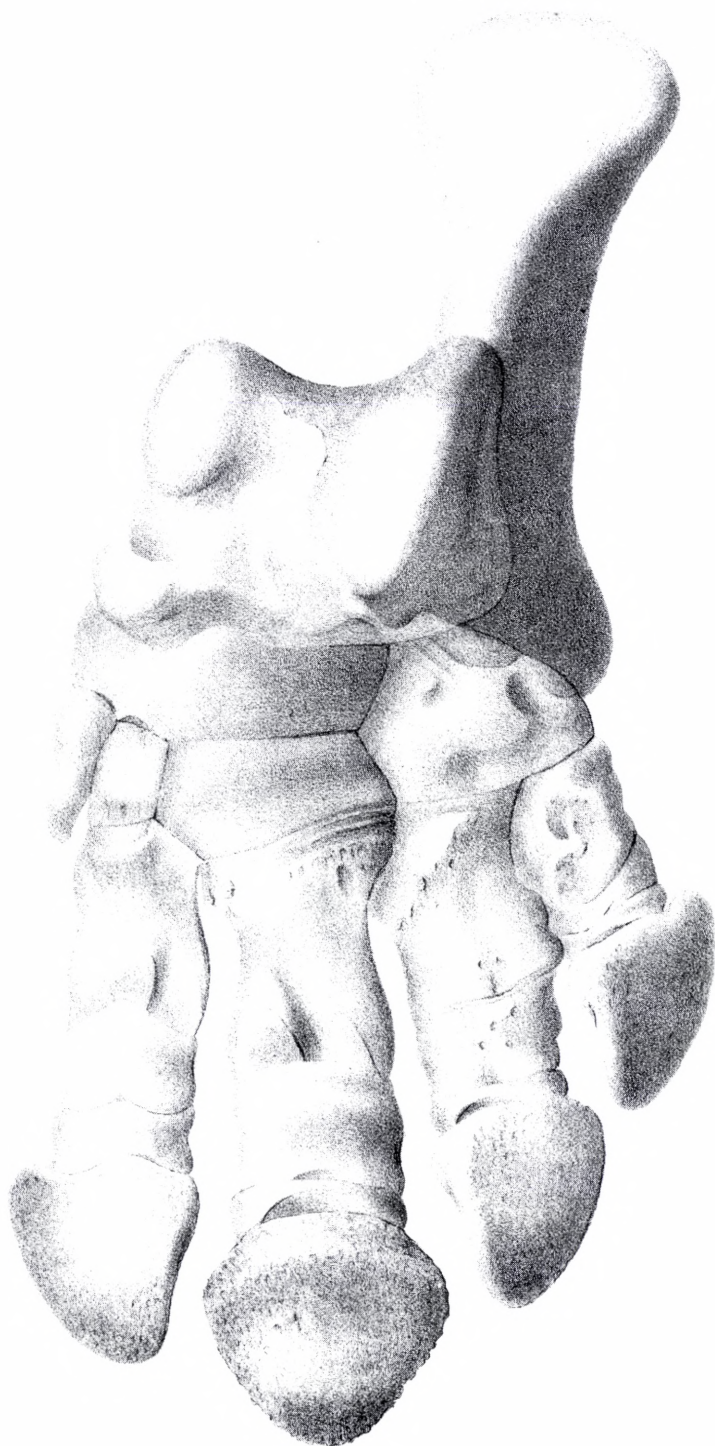
categories of the projects which the Society deemed worthy of support.

Here the acquisition of expensive scientific equipment occupied a prominent place. For instance, in 1830 the Botanical Gardens were provided with a microscope of the modern type developed by G. B. Amici in Italy. Two years later a similar instrument was purchased for Dr. Michaelis in Kiel, and in 1835 also the young Copenhagen anatomist Henrik Carl Bang Bendz (1806-1882, elected 1840) was given a microscope; and finally a fourth instrument was bought in 1837 at the request of six ordinary students.

While the Society did not hesitate to support promising young scientists, its own members seem to have been more reluctant to draw upon its resources. At least this was the case with H. C. Ørsted who had other means at his disposal and only on one occasion in 1826 obtained a grant of 500 Rbd. for the continuation of his research on the compressibility of liquids, a subject on which he had in 1823 contributed his second and last paper to the Writings. Among his collaborators on this project was the engineer and physicist Ludvig August Colding (1815-1888, elected 1856), who made one of the most important Danish contributions to 19th-century physics as a whole. His paper "Nogle Sætninger om Kræfterne" (Some propositions on forces) from 1842 contained nothing less than an independent formulation of the principle of the conservation of energy (called "force", as usual at this time), with an experimentally determined value of the mechanical equivalent of heat. The paper was submitted to the Society in 1843, but only printed in the Records for 1856. In consequence J. P. Joule in England and Robert Mayer in Germany have been universally hailed as the fathers of the energy principle, whereas the originality of Colding's work has been appreciated only in modern times, – a sad example of the unfortunate consequences of the decision to publish only in Danish.

An area of research of particular interest to Danish scientists was the vast Danish possessions in the North Atlantic and arctic regions. Here pioneering work had been done in 1821 by the young Forchhammer, who investigated the geology of the Faroe Islands with the support of the foundation *Ad usus publicos*. Further away the investigation of Greenland came to enjoy the continuous support of the Society. This began in

Left hind foot of an extinct species of armadillos, the Hoplophorus euphractus, discovered in Brazil by P. W. Lund. – From Naturvidenskabelige og matematiske Afhandlinger, Vol. XII (1846) Tab. 52.





Among the still living animal species first described by P.W.Lund was the previously unknown hunter which he baptized Icticyon venaticus because of its similarities with both the dog and the marten. — Naturvidenskabelige og matematiske Afhandlinger Vol. XI (1845) Tab. 41.

1828 with a travel grant of 600 Rbd. to the young geologist Peter Christian Pingel (1793-1852, elected 1842), who visited Greenland in this and the following year, discovering among other things that the level of the western coast of the country had been lowered since the first arrival of the Norsemen 800 years earlier. Greenland was also visited by the zoologist Henrik Nikolai Krøyer (1799-1870, elected 1840), whose careful and beautifully illustrated treatise on the amphipods of Greenland won him the Silver Medal of the Society and was printed in the Writings for 1837, in the same volume in which also his colleague Johannes Theodor Reinhardt began a series of publications on the animal life of the country.

Last, but not least, we must mention the role of the Society of looking after Danish scientists working permanently in other countries. This was no new task, as the many previous deliveries of scientific instruments to missionaries and officials in the colonies have shown. Nevertheless, the contact between the Society and the naturalist Peter Wilhelm Lund (1801-1880, elected 1831) marked a new and remarkable phase of its activity. Lund had had a brilliant career as a student in Copenhagen, where he had received a Gold Medal from the University for a treatise on the blood vessels of ten-legged crabs. Owing to a German and an Italian translation this paper had made his name known in other countries, giving him access to Cuvier and other prominent zoologists. For reasons of health Lund stayed from 1825 to 1829 in South America, returning there in 1833 to spend the rest of his life in the Brazilian

uplands at the village of Lagoa Santa. Here he wrote his first paper for the Writings, an account of the vegetation of Brazil; this earned him a support of 2,000 Rbd. from the Society; it was followed by several others and was by far the most generous support as yet given to an individual scientist; it forced the Society to use some of its capital, to the displeasure of some of the members. The result was an impressive series of contributions to the Writings concerning a huge number of fossils, including many extinct species that were here identified and described for the first time, and depicted in excellent lithographic illustrations made by the Norwegian artist P. A. Brandt. When copious extracts from these papers were published in French translation in the *Annales des Sciences Naturelles* (1839-40), Lund's work was saved from the oblivion which had been the fate of Colding's contribution to physics. Refusing an offer from the British Museum, Lund donated his collections to King Christian VIII, and most of them reached Copenhagen on board the *Galathea* in 1847. At this time Lund's active period of research was more or less over, but his contact with the Society was kept alive by visitors like Reinhardt who went to see him three times, and by the botanist Johannes Eugenius Bülow (Eugen) Warming (1841-1924, elected 1877), who worked with him from 1863 to 1866. A monument to his achievement is the ten volumes *E Museo Lundii* that appeared from 1888 to 1915, edited by Reinhardt and later by the zoologist Adolf Herluf Winge (1857-1923, elected 1910).

CHAPTER XIII

The Society and the World of Man

While Ørsted's period witnessed an increasing commitment to the study of nature, it might seem that the Society paid less attention to the investigation of the world of man within the humanistic disciplines. Here the great legacy from the 18th century, – the Danish Dictionary – continued to progress, although at a very uneven pace. Admittedly also the historical and philological contributions to the publications arrived more slowly than their scientific counterparts. Nevertheless, a closer look at the circumstances in which the humanities were pursued may easily dispel the idea that they were in a languishing situation. As we are going to see, the truth is that humanistic studies flourished in this period as rarely before, sometimes leading to results of far-reaching consequences for scholarship, even in a world-wide perspective. The only problem is why this did not make a more visible impact on the Society or, to be more precise, on the picture which later times have formed of its work.

Here it is important to remember that the Society was in practice the only forum for scientific debate above the level of vulgarisation, whereas there was a remarkable proliferation of humanistic associations and journals, most of them being founded and directed by members of the Society. We have already noticed the revival of Langebek's old Royal Society for Danish History and Language and the resuscitation of its journal, the *Danske Magazin*, in 1843; but other journals also provided new outlets for literary and historical studies at different levels of scholarship. Of general interest was the literary monthly *Athene*, which was first edited by Rasmus Nyerup and from 1814 by Molbech before he became a member of the Society. We have also seen that the polemic in 1843 between Molbech and Schouw about the History of the Society was conducted in *Dansk Ugeskrift*, of which Schouw himself was the editor. Among the new scholarly associations was Det kongelige nordiske Oldskriftsselskab (The Royal Society for Ancient Nordic Literature), which was founded in 1825 by a circle of philologists with Rasmus Kristian Rask as its first chairman; from 1832 onwards it published its own, still existing journal called (since 1866) *Aarbøger for Nordisk Oldkyndighed og Historie* (Annals of Nordic Antiquities and History). As a

final example of this lively movement appeared Den danske historiske Forening (The Danish Historical Association), which was founded in 1839 by Molbech, who was also the first editor of its journal, *Historisk Tidsskrift* (Historical Journal), which is still prospering today.

All this activity created a fertile milieu for a great variety of humanistic studies, with members of the Society taking the lead in almost every field. But before we turn to this part of the story we must consider the only humanistic project which came to engage the Society as such in this period. Like the cartographical project it was of national importance. For while the mathematicians had now finished their survey of the Danish landscape, and the philologists were toiling with the surveying of the Danish language, the historians decided to embark upon the first general survey of the sources of Danish history.

The pre-history of this ambitious project goes back to the time before the foundation of the Society, when in 1731 Hans Gram conceived a plan of publishing a complete *Corpus Diplomaticum* comprising all documents illustrating the political and ecclesiastical history of Denmark and Norway. After his death his great collection of excerpts made for this purpose was supplemented by many thousands of items collected by Langebek at home and during a long journey through Sweden, Finland, and all the Baltic regions, or procured from the archives of the Vatican. This revealed the scope of the project which came to a halt when Langebek died in 1775. His material was placed in the Royal Archives, where Suhm was able to utilise it for his History of Denmark, the fourteenth and last volume of which was seen through the press by Rasmus Nyerup in 1828.

Suhm's great work had disclosed many of the historical treasures stowed away in Langebek's many manuscript volumes, and it is understandable that the idea of reviving the project of a *Diplomatarium* should first be ventilated in Langebek's own Society. This "Little Society" was no longer small, but comprised most Danish historians and philologists of any standing, including many who were prevented by more or less irrelevant circumstances from becoming members of the Society. It was a scholar belonging to this latter group, the archaeologist Christian Jürgensen Thomsen (1788-1865) who first made a formal proposal of resuming the project at a meeting 1827 May 8.

The ensuing discussion made two things clear. Firstly, that the idea of a complete *Diplomatarium* of fully edited documents was premature; it had to give way to a more manageable plan of a calendar or *Regestum Diplomaticum* listing all printed charters and diplomas until 1660 when

the absolute monarchy was established. But, secondly, even this restricted project was deemed too heavy for the forces and means of Langebek's old association. The result was that two of its supporters decided to lay it before the Society of which they were both members. One of them was Molbech and the other the professor of law Janus Lauritz Andreas Kolderup-Rosenvinge (1792-1850, elected 1824).

At a meeting 1828 April 11 the matter was discussed and a committee formed by the two proposers and two other historians, Laurits Engelseft and his colleague Erich Christian Werlauff (1781-1871, elected 1820). On May 11 they submitted that the Society should undertake the publishing of a

complete, critical calendar of all printed diplomas and documents, – be they public or private, domestic or foreign – concerning Denmark and Danish personalities until A.D. 1660 [Lomh. III, 323], under the supervision of a Commission for the Publishing of a Danish Diplomatarium and a Danish Diplomatic Regestum, with Engelstoft as chairman. Despite its name this Commission realised, too, that it could only manage the publication of the *Regestum*, whereas a complete *Diplomatarium* must be a matter for the future. Consequently, it became known as the Regesta Commission.

Being approved by the Society, this project was immediately set in motion, with Kolderup-Rosenvinge as the principal inspirer. Three younger scholars were engaged to excerpt the documents and were joined in 1834 by the historian Hans Knudsen (1801-1851), who became the most prominent member of the staff. The progress of the work was such that in 1837 Kolderup-Rosenvinge proposed that the printing should begin.

The work made swift progress and by 1840 no less than 14,254 documents had been excerpted. Printing began two years later, and in 1843 the first part of the first volume appeared with the long, but precise title *Chronologisk Fortegnelse over hidtil trykte Diplomer og andre Brevskaber til Oplysning af den danske Historie fra de ældste Tider indtil Aar 1660 med kort Angivelse af Indholdet*. On an extra title-page in Latin the work was called *Regesta Diplomatica Historiae Danicae*, and it is now usually referred to as the *Regesta*. In 1847 the second part of the volume appeared, making a total of 887 pages in quarto, and containing 8,383 regesta from the period before the Reformation in 1536. A second volume with 14,307 entries covering the period until 1660 appeared in two parts in 1859 and 1870 respectively. At this time many previously unknown documents had come to light, and it was necessary to supple-

ment the collection by two additional volumes with a total of almost 36,000 entries; the final part appeared in 1907, eighty years after the project was initiated.

The *Regesta* were in many ways one of the most enduring achievements of the Society in the 19th century. They were neither exhaustive, nor free of errors; but they contained a wealth of information and have remained an indispensable tool for all scholars studying the history of Denmark in the time before the absolute monarchy. The other part of the project, the *Diplomatarium*, was never seriously considered by the *Regesta* Commission. It was a far more demanding task, surpassing the means of the Society, and it was not until 1938 that the first volume of the great *Diplomatarium Danicum* (with a parallel series of translations into Danish) appeared under the auspices of another learned association, Det Danske Sprog- og Litteraturselskab (The Danish Society for Language and Literature). The production of such parallel versions is no doubt a unique event in scholarly publishing. Until now it has resulted in 2x30 volumes covering the period until 1385, published with the permanent support of the Carlsberg Foundation.

Providing scholars with a new tool for digging into the past, the *Regesta* exemplified a specific trend in humanistic studies in the first half of the 19th century, not only within the Society, but also in the intellectual life in Europe as a whole. It was based on a new awareness of the legacy of the past and a new conviction that this legacy was relevant to the present. This was in conscious opposition to the philosophy of the Enlightenment, which saw the history of civilization as a more or less steady progress, fuelled by the advancement of scientific knowledge, and marked in particular by a strong disrespect of the Middle Ages as one long period of intellectual obscurantism and religious bigotry. The "Romantic" movement of the new century found such views too narrow and dogmatic, refusing to accept a condescending attitude to the past as an underdeveloped period of little interest, except as a preparation for more advanced times.

There were several reasons for this shift of emphasis. Everywhere the idea of unity came to play a significant role. "Romantic" scientists like Ørsted were convinced of a fundamental unity of the forces of nature, and historians became more aware of the continuity of human history, acknowledging that each historical period had had its own part to play and ought to be evaluated on its own premises, but not simply judged by the opinions or prejudices of future ages. This attitude to history grew in the fertile soil prepared by the great upheavals of the French Revolution

and the Napoleonic Wars, in the wake of which a new national consciousness was emerging in many regions of Europe. Both old and new nations were faced with problems of national identity, which might be solved by delving into the past in order to discover the historical factors that had formed and defined the national consciousness over the ages.

Here it was unavoidable to reconsider the historic role of the Middle Ages for the simple reason that this vaguely defined period comprised the beginning of historical times in most of the countries of Northern and Eastern Europe. This led to two different reactions. On the one hand, poets, novelists, artists and architects were everywhere inspired by the idea of the Middle Ages as one of the highlights of civilization, – an enthusiasm which was as one-sided and exaggerated as the disrespect of the Enlightenment for the Medieval world had been, and usually based on equally slender foundations. In Denmark this Romantic or “Golden Age” in literature and art was rung in by the young poet Adam Oehlenschläger (1779-1850) with a resounding poem on the *Golden Horns*, two large drinking vessels of pure gold with runic inscriptions found at Gallehus in North Schleswig in 1639 and 1734 respectively, as tangible evidence of a glorious past, and providentially revealed as an intimation of an equally glorious future. Soon a subsequent series of impressive poetic and dramatic works made Oehlenschläger the leader of the new movement, giving him for half a century a status in the literary life of the country similar to that occupied in the scientific world by H. C. Ørsted, to whom he was related by marriage.

However, it is important to realise that this more scholarly approach to the past was not just a consequence of the Romantic revival. It was well under way in the period of the Enlightenment, when Hans Gram had made preparations for the Danish *Diplomatarium*, and Langebek had published his great collection of Medieval historical writings. But gradually the perspective was enlarged, and instead of focusing only on the history of the kings and their wars, historians became increasingly aware of the social life of the people and the literary remains in which it had been reflected. A typical figure in this transition was Rasmus Nyerup, who was a true child of the Enlightenment and at heart a rationalist; as a young man he had proposed abandoning the Faculty of Divinity and transferring the teaching of theology to the department of history as an “account of the aberrations of the human mind”. But this had not prevented him from becoming professor of literary history, and it was he who produced the monumental, five-volume edition *Udvalgte Danske Viser fra Middelalderen* (Selected Danish Ballads from the Middle Ages,

1812-1814), in collaboration with his colleague Knud Lyne Rahbek (1760-1830, elected 1820), and Captain Werner Abrahamson (1744-1812), who taught Danish at the Military School. This was not the first, but certainly the most comprehensive edition of this unique treasure of old Danish poetry; as such it became a source of inspiration for many Romantic poets, and also the precursor of much scholarly activity in this field, culminating in a new edition in 12 volumes (1853-1976) called *Danmarks Gamle Folkeviser* (Ancient Danish Ballads), published under the auspices of two learned editorial societies and supported over a century by the Carlsberg Foundation.

The transition from a rationalistic to a romantic attitude towards the past was accomplished around 1820 as it appears in the early works of Christian Molbech, beginning with an edition of the *Rimkronike*, a fifteenth-century versified chronicle (1825), and followed by similar editions of a 13th-century text-book of medicine by the Roskilde canon Henrik Harpestreng (1826) and by the poetic works of the Odense Canon Michael from the fifteenth century (1836). Of particular interest was his edition of a manuscript in the Royal Library containing a Danish translation from before A.D. 1500 of several books of the Old Testament. *Den ældste danske Bibeloversættelse* (The Earliest Danish Bible Translation) was a major work of 638 pages. It appeared in 1828 at the cost of the Society, arousing much interest as a proof that the Bible in the vernacular was not exclusively a child of the Reformation. Later philologists have often returned to the same manuscript as an important source of the history of the Danish language in the late Middle Ages.

Of great historical significance was also the free Danish version of the principal source of early Danish history, the *Gesta Danorum* by Saxo Grammaticus (ab. 1200), published 1818-1824 by Nicolaj Frederik Severin Grundtvig (1783-1872). The many-sided activities of this poet, historian, preacher, and educator made him one of the most influential figures of his century and the originator of a popular revival, in which national feeling mingled with a new awareness of the Church as a living body in a way that is still making an impact on the cultural life of the country.

Such attempts to make the legacy of the Middle Ages available in translation as a stimulus to contemporary life had their counterparts in many other countries. What gave a distinctive flavour to Medieval studies in Denmark was the fact that the University of Copenhagen had become the repository of Árni Magnússon's great collection of Icelandic books and manuscripts. These priceless remains offered unique opportunities for studying how Icelandic culture had flourished in the Middle

Ages, far away from the mainland of Europe, and not with Latin, but with the vernacular Old Norse as its linguistic basis. Here, too, the beginning was made in the 18th century when Abrahamson translated the Saga of Gunlaug Ormstunge into Danish (1779). In the following development the Society came to play a significant role with the Prize Essays as an instrument for directing the course of studies in this field. It began in 1782 with the announcement of a Prize Essay on Old Norse poetry, for which a gold medal was given to the Icelandic scholar Jón Ólafsson (1731-1811). He was the brother of the explorer Eggert Ólafsson mentioned in Chapter IV, and worked in Copenhagen on the basis of one of the scholarships that Árni Magnússon had endowed. In 1786 his work *Om Nordens gamle Digtekunst* (On the Old Poetry of the North) was published by the Society as a fine volume of 256 pages in quarto.

In the following century Nyerup also contributed to this field by a translation of the *Younger Edda* (1808), in the preface to which the author showed his broadness of mind by thanking Oehlenschläger for his inspiration. The *Elder Edda* was the subject matter of a new Prize Essay on the relationship between the Old Nordic and the Persian religions. It resulted in a gold medal to Finnur Magnússon (1781-1847, elected 1830), a nephew of Jón Ólafsson, who later published a greatly expanded version of his work with the support of the Society in his *Eddalæren og dens Oprindelse I-IV* (1824-1826, *The Doctrine of the Edda and Its Origins*).

The scholarly occupation with Old Norse poetry, history, and religion was of indubitable value as a new and fascinating contribution to the study of a singularly interesting part of Medieval civilization. What no one could foresee was that it would have even more far-reaching consequences in the purely linguistic field. It goes without saying that it presupposed an intimate knowledge of the Old Norse language, which was practically the same as contemporary Icelandic; but this was no problem in Copenhagen where Icelandic students and scholars were always in residence. Nevertheless, the Society became instrumental in transforming the study of Old Norse into a new and much more general discipline. In 1810 it announced a Prize Essay proposing

To apply historical criticism to investigate, and by appropriate examples to illuminate, the source from which the old Scandinavian language can be derived with certainty; to indicate the character of the language and its relations to the Nordic as well as the Germanic dialects from the earliest times and throughout the Middle Ages;

and precisely to determine the principles on which all derivation and comparison of these languages must be founded.

In return it received an essay by the student Rasmus Kristian Rask, who had made himself familiar with Icelandic and several other languages already as a schoolboy. Later he had assisted Nyerup with the Edda-translation of 1808, and in 1811 he published his first independent work, an introduction to the Icelandic language. His work on the Prize Essay began in 1812 and was finished during his stay in Iceland from 1813 to 1815, and submitted to the Society, which immediately awarded him a Gold Medal and published a preliminary report on it as a five-page summary in the first volume of Ørsted's Records (1816).

It is hardly an exaggeration to regard this Summary as one of the most momentous contributions to the Records as a whole in this period. It begins by introducing the author as

already favourably known for earlier works on the old tongues of the North, the present one contains an extensive comparison between this and the more important old and new European languages, even with respect to their dialects [p. 19].

There follows a concise description of what is new in Rask's approach. The author

does not content himself with considering similarities between the vocabularies of these languages, by means of which it is not easy to ascertain whether similarities are due to foreign intrusions or to a common origin. Principally it is the structures of the languages to which he pays attention. For him their grammar is more important than the names they give to objects. Yet the latter are important to him, too, in cases where the languages have the most important and indispensable words in common (...) and in particular when the similarities are so numerous and so related that one can formulate laws for the transitions between the letters [p. 20].

This latter principle, – where we would today say “sound” or “phoneme” instead of “letter” – enabled Rask to trace previously unnoticed grammatical relationships; together the grammatical and the phonetic principle enabled him to shed new light not only on the Nordic languages, but also on the European languages in general. The Summary mentions some of his results.

“Old Scandinavian” is identified with Icelandic. It springs from the same root as other Germanic tongues, but is not derivable from any of these. Together they form a special family of “Gothic” languages that

has decisive features in common with the Greek, Latin and Slavonic languages (Rask later included Celtic), but is radically different from Finnish and Basque. In this way Rask was able to draw the contours of the great family of languages which he named "Thracian", but which is now called Indo-European.

Rask's work appeared in print in 1818 as the *Undersøgelse om det gamle Nordiske eller Islandske Sprogs Oprindelse* (Investigation of the Origin of the Old Norse or Icelandic Language) – a title which agreed with the formulation of the Prize Essay of 1810, but gave no indication of the much richer content of the book. By this time Rask was already away on a long journey which took him from 1816 to 1823 through Sweden, Finland, and Russia to Persia and India. It resulted among other things in the extension of the "Thracian" family with both Old Iranian and Sanskrit, whereas Rask was able to place Tamil in a different, non-Indo-European group of South Indian languages.

Rask's achievements and role as the principal founder of the new discipline of comparative philology were perhaps the most important contribution of any single member of the Society within the domain of the humanities. However, being published in Danish his works did not get immediate international recognition. In consequence the German scholar J. Grimm was usually credited with the discovery of the phonetic laws called the Germanic Sound Shift although Rask was the first to demonstrate them. In Denmark his work on the oriental languages was continued by Niels Ludvig Westergaard (1815-1878, elected 1847), whose critical edition of the *Avesta* (1852-1854) appeared in Copenhagen and won him European fame. Since then the numerous manuscripts in Pehlevi, Zend, Pāli, and Sanskrit acquired in the East by Rask and Westergaard have made the Royal Library of Copenhagen a focal point of oriental studies.

It is an ironic fact that the Danish founder of comparative philology Rasmus Kristian Rask (1787-1832) was prevented from publishing in the Writings of the Society because of his insistence on a new system of spelling of his own invention. This explains why the Society owns only a single document in his handwriting, an eight-page manuscript from 1824 of a Specimen Etymologici Danici. This was a preliminary sketch of a large, but never finished work on Danish etymology. The final page reproduced here shows his extraordinary familiarity with many different languages such as Greek, Latin, Russian, Polish, Icelandic, German, and Anglo-Saxon. (Archive of the Society).

unde incertum manebit utrum pro matre an filia habenda sit, sed latius propagata invenitur haec familia: dicitur nempe aurum rossice золото, polon. metathesi admodum frequenti złoto (pro zolto) item verbum pro-allocie germ. vergoldet inaurō. Transitus litterarum slavon. z & ž in nostras in grecos-latinas g, c, x frequens est, ex. c. zerno - Kjerne, korn, gramme, znyu - it. ronai, ronā anglos. cnave, gnavi; berera - germ. Birne, betula; roz - Blug germ. Bocken secale; lezu - germ. liege, gr. λεγομαι (apud Homerum); pol. loze - it. lega, gr. λεγος x-doxos &c. ita ut de identitate harum vocum haud facile dubitaveris, praesertim reputans το lab, germ. Silber, mærog. сидѣ etiam rossice серебро, polonico (adhibita metathesi solita) srębro evidenter cognatum, immo idem ipsum esse. An vero grecorum χελος ejusdem sit familia, haud certe ausim asseverare, etiam non absurdus videtur qui hoc suspicatus fuerit; litteram χ scilicet pro z nostro adhiberi & transponi luculenter testatur nuper allatum pol. srębro pro srębro; si vero ad eandem analogiam pro χελος, χυλος restitueris; ceteri litterarum transitus (inter χυλος et mærog. хѣлѣ) frequentissimi sunt in hisce linguis: φ, δ, χ fiunt apud nos β, d, g, v. gr. φειν bera, δυρα dyr, εχειν ega; σ vero post consonantem fit regulariter apud fœsogothos z apud nos d, ex. c. χελος - mærog. хѣлѣ, germ. Erde terra; αδωος germ. Wald saltus.

Hafnia in Febr. 1821.

Erasmus Rask.

The Society also stimulated the growing interest in Medieval history by announcing a number of Prize Essays, of which the essay for 1816 on Saxo's reliability as a historian was not answered; but a following essay on monastic history (1823) was returned by a teacher at Soroe Academy, the later bishop Jacob Brøgger Daugaard (1796-1867), who received both a Gold Medal and financial support for the printing of his work *Om de danske Klostre i Middelalderen* (On the Danish Monasteries of the Middle Ages), which appeared in 1830 as a quarto of 487 pages. Although the author did not succeed in identifying all the about 140 religious houses in pre-Reformation Denmark, his work was the first general survey of its kind. Another Prize Essay on the secular and ecclesiastical guilds of the Middle Ages (1828) was answered by the German scholar W.E. Wilda and published in 1831 at Halle with the title *Das Gildenwesen im Mittelalter*. In this connection it is worth noting that the Society also decided to pay for the printing of a geographical-statistical work on Medieval Denmark, although it was not a Prize Essay but written on his own initiative by the student Hans Knudsen. Its first part appeared in 1834, but the work was discontinued in the following year, when the author joined the group working on the *Regesta*.

A new dimension was added to the historical studies by Kolderup-Rosenvinge, who established legal history as a special discipline already before he became the prime mover of the *Regesta* project. His *Grundrids af den danske Lovhistorie I-II* (Elements of the History of Danish Law) appeared in 1822-1823 as a text-book for students. It was translated into German (1825), where Savigny's famous work on the history of Roman Law from the same years was preparing the soil for the acceptance of legal history as an important part of the history of civilization in general. To promote the new discipline Kolderup-Rosenvinge also published a great *Samling af gamle danske Love* (Collection of old Danish Laws) in five volumes appearing from 1821 to 1846. It was followed by his *Udvalg af gamle danske Domme* (Selection of Old Danish Court Sentences) in four volumes from 1842 to 1848, a work that presented a wealth of material, not only for legal history as such, but also for the history of the Church, the Danish language, and the life and work of individual people.

In the first half of the 19th century archaeology also underwent a significant change; from being an unsystematic occupation with "antiquities" of any kind it developed into an independent discipline based on well-defined methodological rules. A key figure in this transition was the Danish scholar Georg Zoëga (1755-1809, elected 1798), who worked in Rome all his life. At home one of the pioneers was Peter Oluf

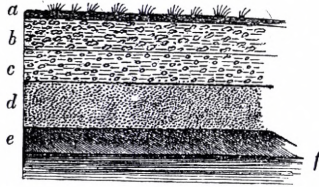
Brøndsted, who had been a member of the international team making systematic excavations in Greece (1811-1813), before he became director of the Royal Collection of Coins and Medals and (from 1842) professor of philology and archaeology.

On the domestic scene there was a long tradition of studies of Nordic antiquities, among other things because of the many runic inscriptions which had been a challenge to scholars for a long time. Another riddle was the puzzling figures depicted on the Golden Horns, on which the Society announced a Prize Essay in 1803, one year after the original horns had been stolen from the Royal Art Cabinet, and irretrievably lost by being melted down by the thief. The Essay was answered by the philologist P.E. Müller whose attack on the Dictionary has already been mentioned. Having been awarded a Gold Medal he published his essay in 1806 in a book in which the problem was attacked in all the traditional ways. In the following year things began to move in a new direction. A Royal Commission for the Keeping of Antiquities was established (with Nyerup as secretary) as a first step towards that reorganisation of the many separate collections which ended at long last in 1892 with the establishment of *Nationalmuseet*, the National Museum of archaeology and ethnography.

When Nyerup resigned from the Commission in 1816, he was succeeded by the young Christian Jürgensen Thomsen. This was a remarkable choice, considering that Thomsen had no academic degree, but was known only as an intelligent and well read collector. However, Nyerup recommended him with the remark that "with regard to such a position Thomsen had no equal in the seven kingdoms", to which Münter added the sensible comment that "the important thing is not from where one has obtained one's knowledge, but that one has obtained it".

Thomsen began his reorganization of the Old Royal Collection in 1818 on radically new principles of his own. Discarding all literary, philological or folkloristic criteria, he adopted a strictly chronological arrangement of the objects under the general headings of Stone Age, Bronze Age, and Iron Age remains, a systematization he described in 1836 in a brief anonymous work called *Ledetraad til Nordisk Oldkyndighed* (Guide to Nordic Antiquarianism). Gradually the system of the Three Ages was adopted by archaeologists all over the world, so that Thomsen's achievement became of universal importance. Given the circumstances of the Danish museum world at the time, the Society as such had no part in his fame. Nevertheless, one cannot help wondering at the prejudice which prevented him from being elected a member, presum-

Paa første Sted bestod Banken imod Fjorden af en steil eller lodret Skrænt og en fra den nederste Del af samme gaaende svag Skraaning imod Fjorden. I den lodrette Skrænt saaes överst en tynd, 1—3 Qvarter tyk Jordskorpe *a* af mager sandig Muld,



blandet med Smaastene og Muslingbrokker; under denne kom et Lag af 6—7 Fods Mægtighed, der i sin överste Halvdel (*b*) bestod fornemmelig af Muslingskaller, og i sin nederste Halvdel (*c*) dannedes af disse og en stor Del rundede Smaasten, der kun vare 2—3 Tommer i Gjennemsnit. Underlaget (*d*) bestod af Lag. af Strandsand og finere og grovere Grus, og var ligeledes 7 Fod mægtigt, men der fandtes næsten ikke Spor af Dyr deri. Fra Grunden af denne 14—15 Fods höie lodrette Skrænt gik der en jevn for største Delen græsklædt Skraaning, til den överste *Tanglinie*, eller den Linie hvorpaa stærk Bölgegang afleirer den opkastede Tang; denne Skraanings (*e*) Höide kan omtrent være tre Fod, og først nedenfor denne kommer den sædvanlige Tangbred eller den Linie, hvortil Havet gaaer ved den sædvanlige Bevægelse. Fölgelig ligger det store Lag af Muslinger i en Höide fra 10—17 Fod over Stedets höieste Vandstand (*f*).

An important contribution to 19th century archaeology was the discovery of the kitchen middens by Japetus Steenstrup and J. J. A. Worsaae. Steenstrup's Communication to the Society 1848 January 7 was published in the Records 1848/49 where the first picture of this form of archaeological remains is found. It shows a section of a steep cliff on the coast of Roskilde Fjord with strata (marked b and c) high above sea level, containing shells and bones left here by pre-historic inhabitants.

ably because of his "non-academic" status; Münter's wise words were forgotten.

Everything considered it has to be admitted that the Society as such was rather inactive in the archaeological domain until the very end of our period, when it launched a small project that was of considerable interest, not only because of its results, but also because of the interdisciplinary method by which it was pursued. The purpose was to investigate the nature of the many low mounds of shells found in several places along the coasts of Denmark. This task was entrusted to a special committee of three members, the first of whom was the chemist J.G.Forchhammer, whose geological researches were mentioned in Chapter XII. He was joined by the zoologist Johannes Japetus Smith Steenstrup (1813-1897, elected 1842), whose name we shall meet on several later occasions. Already as a student he had produced a remarkable answer to a Prize Essay for 1834 on "The conditions in which the conifer trunks are found in our peat bogs", – a pioneer work in which the author identified four separate periods of natural afforestation during the five or six thousand years since the country "emerged from the waves of the sea" without glacial ages in between, as Forchhammer always maintained. The third member of the committee was a former pupil of C.J.Thomsen, the young Jens Jacob Asmussen Worsaae (1821-1885, elected 1852), who was not yet a member, but already famous for his work on *Danmarks Oldtid, oplyst ved Oldsager og Gravhøje* (Danish Antiquity Illustrated by Ancient Objects and Burial Mounds). Published in 1843 and translated into German and English, it was the first exposition of Danish pre-history based on the new archaeological methods. In the following year Worsaae had shown his critical acumen by definitely proving that the famous lines on the rock at Runamo in Sweden were not a runic inscription, but natural cracks in the stone, contrary to what Finnur Magnússon and Forchhammer had argued in 1833. In the course of time Worsaae became Inspector of Ancient Monuments, and also a professor at the University where he inaugurated Nordic archaeology as an academic discipline.

The committee examined several shell mounds and found that beside shells they also contained animal bones. This enabled Worsaae to draw the conclusion that these mounds were not natural formations, but heaps of waste from pre-historic settlements of populations of fishermen and hunters. Steenstrup coined for them the new term "Kitchen Middens" which has since become universally accepted, and it was also he who

reported on the result to the Society, which continued to support these investigations out of its own means for almost twenty years.

While the humanistic section of the Society made significant and indeed epoch-making contributions to philology, history, and archaeology, we hear very little about the philosophical class. Around the turn of the century it had comprised Børge Rüsbrigh (1731-1809, elected 1796), whose only contribution to the Writings was a penetrating critique of H. C. Ørsted's dissertation, and the Norwegian Niels Treschow (1751-1833, elected 1798), who left for the University of Christiania in 1813. Half a century later the class had dwindled to only two members, one of them being the aged Frederik Christian Sibbern (1785-1872, elected 1816), who never published in the Writings or Papers of the Society, and the theologian Hans Lassen Martensen (1808-1884, elected 1841), whose works on ethics and fundamental theology were widely known and admired. Prize Essays were frequently announced, but only rarely answered, and in one case with a kind of academic scandal as the result. In 1840 an answer to the essay for 1837 on the "Source and Foundation of Moral Philosophy" was rejected. It was written by no other than Arthur Schopenhauer in Frankfurt, who took his revenge the following year by publishing his book *Über das Fundament der Moral* with the subtitle *Nicht gekrönt von der K. Dänischen Societät der Wissenschaften zu Kopenhagen*, underlining the blunder by accompanying the book by another treatise on the freedom of the will for which he had been given a gold medal by the Trondheim Society. The Marburg philosopher Franz Vorländer had better luck, winning a Gold Medal in 1850 for an essay on Schleiermacher. A long pause followed until 1882, when the next Gold Medal was awarded to Kristian Kromann (1846-1925, elected 1884) for an essay on *Vor Naturerkjendelse* (Our Knowledge of Nature).

On the background of this stagnation one cannot help wondering that the Society never elected the only Danish thinker of world-wide renown from this period. Søren Kierkegaard (1813-1855) had presented his academic credentials in 1841 with a dissertation *Om Begrebet Ironi med stadigt Hensyn til Socrates* (On the Concept of Irony with Continuous Regard to Socrates). In the next few years he published that astonishing series of philosophical works which led to his present fame as the founder of modern existentialist thought in both philosophy and theology. That the philosophers of the Society found no place for him in their midst no doubt makes a greater impression on posterity than it did on his contemporaries in the small intellectual circles of the capital.

CHAPTER XIV

A Political Interval

Towards the middle of the 19th century a series of drastic events began to change many aspects of public life in Denmark. The absolute monarchy was replaced by a constitutional system of government, new social classes appeared on the political scene, and insurrection and wars reduced the possessions of the King by about one third of their former area and population. With all this the Society as such had nothing to do; but many of its members were drawn into a whirl of political activity in a most unusual way.

Of immediate importance for the Society was the death of King Christian VIII 1848 January 20. The King had been President of the Society for ten years and more dedicated to its affairs than any previous monarch, and at a meeting one week later it was decided to publish a book in his memory. It appeared in the following September with several contributions on the King and his scientific interest [Lomh. II, 67]. The King was immediately succeeded by his only son Frederik (1808-1863), and at the same meeting the Society decided to "present its congratulations to His Majesty King Frederik VII if other Corporations would do the same" [Lomh. I, 222]. Behind these guarded words one clearly discerns the general lack of enthusiasm with which the new King was met in all strata of society. As Crown Prince he had caused much public scandal by his rather dissolute life and his two broken marriages, and the Regional Parliaments of Roskilde and Viborg openly expressed their opinion that he was not fit to be King since "no one considers him to be possessed of the qualities that are necessary for assuming the government himself or for choosing competent advisors". That he became, nevertheless, a highly popular King – honoured by the epithet "Folkekær" (i.e. "Loved by the People"), and by more statues erected in his honour than any other Danish monarch, – was due to his unexpected response to a chain of great national events to which we shall return below.

From the point of view of the Society the new King formed the greatest possible contrast to his father. It is true that he had a genuine interest in archaeology and was often present at excavations in many

parts of the country; but otherwise his intellectual interests were limited, and his relations with the Society were practically non-existent. He never attended a meeting, and the Archives contain no document with his signature. His death in 1863 was not even recorded in the Minute Book or mentioned in the printed Records.

When the Society met 1848 February 11, there was a general feeling that the time had come to place one of its ordinary members in the chair. Those nominated were Bishop Mynster (whom we have already met as one of the critics of Molbech's History) and the jurist Anders Sandøe Ørsted (1778-1860, elected 1810). At the final ballot the latter was elected by 19 votes against 11. The new President was the brother of the Secretary and had been a member of the Society for many years without playing any prominent role, being always preoccupied with matters of more public importance. He had an acute mind, and his textbooks on Danish and Norwegian law inaugurated a new era in Danish jurisprudence. But even more impressive was his political activity in the last decades of the absolute monarchy. It began already in 1810 on the Bench of the Supreme Court; later he became both Deputy Secretary in the Danish Department and Attorney General. In these capacities he was instrumental in the establishing of the Regional Parliaments (1835) in which he acted as the official representative of the King, giving moderate support to the liberal wing led by J.F. Schouw. In 1842 he reached the peak of his career by becoming the Prime Minister of the last absolute King, so there was no doubt that he satisfied the stipulation of the Royal Rescript of 1774 about a President whose "person and office are of a distinguished nature, giving him access to Us" [Lomh. I, 121]. But he was never a popular President, and it is doubtful if he would have been elected if the members had known that the days of the absolute monarchy would be over in a few months.

After the accession of the new King the course of the political events accelerated quickly. The principal items on the agenda were the general desire of a free constitution, and the situation of the Danish population of Schleswig vis-à-vis the German population of Holstein. A liberal manifesto composed by J.F. Schouw and the theologian Henrik Nicolaj Clausen (1793-1877, elected 1833), and approved by the City Council of Copenhagen called for a constitution with a common parliament for the Kingdom of Denmark and the Duchy of Schleswig. But in the government A.S. Ørsted and other ministers opposed any change of the status of the two duchies relative to the kingdom. The result was a compromise. One week after his accession King Frederik VII issued a proclama-



Anders Sandøe Ørsted (1788-1860). Ninth President of the Society (1848-1860). – Painting by Johannes Jensen. Courtesy of the Frederiksborg Museum; now in the State Ministry.

tion instituting an elected parliament with a legislative authority and responsible ministers. When the King signed this document on January 28, the absolute monarchy at long last came to an end. The Liberal cause had won, and the way was paved for a future development towards a democratic system of government.

This project left the problem of Schleswig unsolved. The new parliament was to represent an undivided state, with equal numbers of members from the kingdom on the one hand and the two duchies joined together on the other hand, plus some members directly appointed by the King. This did not meet the Danish aspirations in Schleswig, while

the Germans in Holstein feared to be outnumbered. The situation was further inflamed by the nationalistic upheavals in Germany in the wake of the February Revolution in France, and in March a delegation from Holstein was sent to Copenhagen with demands for a separate constitution for the two duchies and their attachment to an all-German union. This caused a wave of unrest in the Capital. The population took to the streets (March 21), forcing the King to sack the Ørsted government and to abandon its policy of the undivided state. In consequence the deputation was told that whereas Holstein was free to join a German union, Schleswig was to be united to Denmark by a common constitution, although with its own parliament. A proposal to solve the problem by dividing the duchy of Schleswig along the language frontier had been discussed, but rejected by the Danish leaders. As soon as this result was known in Holstein, an insurrection broke out, and in April it came to open war between Denmark and the insurgents, who were soon supported by troops from Prussia and other German states. We shall not here pursue the course of the war, which dragged on for three years, ending with a decisive Danish victory in the field in July 1850. In the following month a conference of the great European powers in London declared that an undivided Danish monarchy (comprising both Schleswig and Holstein) must be preserved for the sake of the political balance in Europe. This was of course a victory for Ørsted's policy; but by upholding the *status quo ante* it did not solve any of the problems out of which the conflict had arisen.

The war effort as such did not affect the Society, although its Secretary contributed to it with a song on "Battle, Victory and Peace" designed to strengthen the morale of the troops. More impressive was the extraordinary political interest of the members, almost one third of whom became members of the special Constitutional Assembly, which met 1848 October 23 in order to prepare a free constitution for the country. One fourth of its 152 members were appointed by the King; among them were A.S.Ørsted, Bishop Mynster, the economist Christian Georg Nathan David (1793-1874, elected 1833), and the Royal Archivist and Historiographer Caspar Frederik Wegener (1802-1893, elected 1843). The other members were elected in local constituencies; they included H.N.Clausen, the classical scholar Johan Nicolai Madvig, the jurist Johannes Ephraim Larsen (1799-1856, elected 1841), the industrialist Johan Christian Drewsen (1777-1851, elected 1835), and last, but not least, the politically highly experienced J.F.Schouw, who became president of the Assembly.

Despite a sharp antagonism between the conservative and liberal wings of the Assembly, the work went surprisingly fast, and the final draft of the constitution was ready at the end of May 1849. As before, the Kingdom was to be a hereditary monarchy; but the ministers of the Crown were made responsible to a Parliament of two Houses, elected by all male, independent householders over thirty years of age, and possessed of all legislative power. The right to private property was confirmed, but all the former privileges of the nobility were abandoned. The Lutheran Church was to be supported by the state, but religious freedom was guaranteed together with the freedom of expression, and in particular the freedom of the press, with the rider that censorship must never be introduced again. Thus the liberal ideas prevailed, and at the final ballot the Constitution was adopted by an overwhelming majority of 119 to four; among the opponents were A. S. Ørsted, Mynster, and Wegener. When the Constitution was signed by the King 1849 June 5, the transition from the absolute system of the past to the democratic system of the future was finally accomplished by one of the most peaceful revolutions in history in which no shot was fired, no arrests made and indeed no hair turned on any of the actors of the drama.

Several members of the Society pursued a political career under the new regime. Madvig was a member of several governments as "Kultusminister" (Minister of Education and Ecclesiastical Affairs) from 1848 onwards, and a member of Parliament until 1874. J. E. Larsen was also elected and together with Wegener played a decisive role in the preparations for the new law of succession, which arranged for the transfer of the Crown to the House of Glücksburg after the death of the childless King Frederik VII. However, the most prominent part fell to A. S. Ørsted, who held several posts in the Cabinet until he became both Prime Minister, Home Secretary, and "Kultusminister" in 1853. His stubborn views on the Holstein question, and his general lack of understanding of the parliamentary game forced him to retire in the following year, after which his presidency of the Society remained his only public duty. However, this outburst of political activity to overthrow the absolutistic system was rather exceptional in the history of the Society, whose members later appeared only rarely on the political scene.

In the very years in which the political development inaugurated a new era for the country the old regime of the Society was also approaching its end. Having been Secretary since 1815 H. C. Ørsted had served it with unflinching devotion and care. He had placed the publications on a solid footing, reformed the Statutes, supervised important scientific

and scholarly projects, and contributed more than any previous official of the Society to giving it a secure position in the intellectual life of the country. Now his powers began to fail him, and it became increasingly difficult for him to cope with the growing amount of correspondence. He was also publicly criticised for his handling of academic affairs outside the Society. Not least the mathematicians were scandalized when in 1847 he made his pupil Carl Valentin Holten (1818-1886, elected 1860) an assistant professor of mathematics although he was not a mathematician, but a mechanical engineer. For this and for his outdated teaching of physics he was severely rebuked in pamphlets by the young mathematician Adolph Steen (1816-1886, elected 1862), who had no difficulties in showing that Ørsted's non-mathematical and purely experimental approach to physics was oldfashioned and indeed harmful. Nevertheless, the whole academic establishment joined together for celebrating the fiftieth anniversary of his career as a teacher (1850 November 7), the university honouring him with a doctoral ring set with diamonds, and the Students' Union with a torchlight procession. At that time he had just published his spiritual testament in two volumes with the singularly apt title of *Aanden i Naturen* (The Spirit in Nature). They contained a collection of essays, addresses, and polemical pieces dealing with his philosophy of science, religious opinions, and educational ideas. In 1849 he also succeeded in getting Holten appointed to a post of assistant professor of physics, and therefore his eventual successor, an arrangement which secured the survival of Ørsted's views of physics until Holten's death in 1886. Ørsted began to read his last paper "Ideas and observations on clouds" to the Society 1851 February 21, only a couple of weeks before he passed away after a short illness developing into pneumonia (1851 March 9). When the Archivist and Editor J. F. Schouw died in the following year, the last member of the old team disappeared, and new forces had to be recruited to carry the Society into a new age.

Ørsted's successor as Secretary was elected at a meeting 1851 March 28; a large majority of the members voted for Forchhammer, while Steenstrup and the physiologist Daniel Frederik Eschricht (1798-1863, elected 1837) got a few votes each; the unwritten law that the Secretary must be a scientist was once again obeyed. In the following year Madvig was elected Archivist and Editor, with the zoologist Jørgen Matthias Christian Schiødte (1815-1884, elected 1844) and the mathematician Christian Jürgensen (1805-1860, elected 1834) as rival candidates. Since the President was usually engaged elsewhere, it was Forchhammer and

Madvig who assumed responsibility for the affairs of the Society in the following, rather uneventful period.

A short break in the business of the Society occurred in 1854, when it had to leave its premises at Christiansborg, where it had met since 1795 (see Ch. IV). But this time it was not put into the street; owing to the influence of Ørsted and Madvig in the government of which they were both members, new and very satisfactory accommodation was obtained at Prinsens Palæ, just opposite the first home of the Society at No 10, Stormgade where Count Holstein had resided.

More important than this change of the external circumstances of the Society were the attempts to reform its internal structure. According to the Statutes of 1796 the members were divided into four classes of very different sizes. This arrangement proved to be more and more inconvenient since, for instance, the philosophical class had extremely few members while the physical class was crowded. This was also the case with respect to the foreign members, whose numbers in each class were limited by the Statutes of 1839 (see Ch. XI). In 1856 Forchhammer proposed remedying this situation by transferring four seats for foreign members from the mathematical to the physical class; but this half-hearted measure was rejected and a Committee established to consider the problem in a more general way. The result was a proposal that the number of classes should be reduced to two by merging the physical with the mathematical, and the historical with the philosophical class.

This radical solution was strongly opposed by the old Christian Molbech for the reason that

the theoretical-speculative philosophy lies quite outside the domain of the historical disciplines (...), so that it would be a very dubious and difficult matter to make the claim to membership of a speculative philosopher dependent on historians or (...) to let a perhaps distinguished and erudite historical scholar be evaluated by philosophers [Lomh. I, 272].

In case the reduction to two classes were adopted, Molbech also proposed that the elections be given back to the society as a whole, i.e. that the members of the respective class should no longer have two votes at the final ballot. He also wished to introduce a *numerus clausus* for the domestic members in each class as was already the case with the foreign members, so that a new member could only be elected when a previous member died. His argument was that the more members a learned society can freely elect, the greater is the risk that not all members

are at the same level with regard to scholarly merit, intellectual

ability and talent to apply it, and eagerness and capacity to work for the common goal and purpose of the society [Lomh. I, 273].

Moreover, Molbech argued that if the number of members was limited, it would follow that

the admission to such a society will not be deemed a trivial and fortuitous circumstance, but (appear as) a decent and honourable recognition in the learned world of the personal value, merits, and ability of the person in question with respect to one or another of the disciplines which correspond to the purpose and activity of the society [Lomh. I, 274].

Anticipating the objection that a limitation of the numbers would prevent truly qualified candidates from being elected, Molbech maintained that this was a non-existent danger if only the maximum number in each class was defined by the average numbers over the last ten or twenty years, – an opinion that revealed Molbech's static conception of the intellectual development in the country; obviously the idea that the intellectual milieu might expand was foreign to him.

Molbech's intervention in this debate was the first recorded expression of a view of the Society as a sort of closed shop in which more attention was to be paid to academic excellence than to the actual length of the queue of potential members waiting for admission. In other words, according to Molbech it would be better to miss some good scholars than to admit a number of second-rate members, – an opinion that has no doubt been shared by several members both before and after the venerable historian of the Society decided to speak his mind. Everything considered, this was a highly delicate matter, and the Society decided to put the question on the back burner for several years to come.

A new situation arose when the President A. S. Ørsted died 1860 May 1 at the age of 81. Contrary to the established tradition he was not honoured by a commemorative speech by the Secretary, but the Records for 1860 contained an obituary notice in which it was frankly said that

In former times he was universally and unreservedly admired and loved; but owing to his convictions he neither could nor would satisfy the demands of a new age, so that he came into opposition to many people, with unfair and ill-considered judgments as the inevitable result. Posterity will show justice to his great intellectual powers, his pure will, and his benevolent mind [Lomh. I, 464].

– certainly a cooler appreciation than any other President had received. But the times had changed since Ørsted's election, and he had not wished to adjust his mind to the new era.

The question of the next President was raised by the Secretary at a meeting on May 18, but postponed until after the summer vacation. When it was brought up again in November, the Secretary asked

if it were not better to defer the election of a President until a later date, since it seemed impossible to find a man distinguished both by his learned interests and his high position in society [Lomh. I, 464].

Strangely enough the members complied with this very irregular proposal without further discussion, being obviously in a serious quandary about what to do. After the abolition of the absolute monarchy no guidance could be found in the Royal Rescript of 1774. Moreover, the new King more or less ignored the existence of the Society, and the Prime Minister Hall was no scholar and not a member. The result was that the Society lived without a President for seven years, leaving it to one or another of the chairmen of the four classes to preside at the meetings.

The major national events in this period were the death of the King and the ensuing war with Germany. When King Frederik VII died 1863 November 15, the House of Oldenburg became extinct, and the Crown passed to Prince Christian of Glücksburg, who was proclaimed King Christian IX on the following day. With a background that was more German than Danish he was coolly received by the population at large, and was not offered the usual congratulations by the Society, which he did not visit until 1892, when he assisted at the celebration of its 150th anniversary.

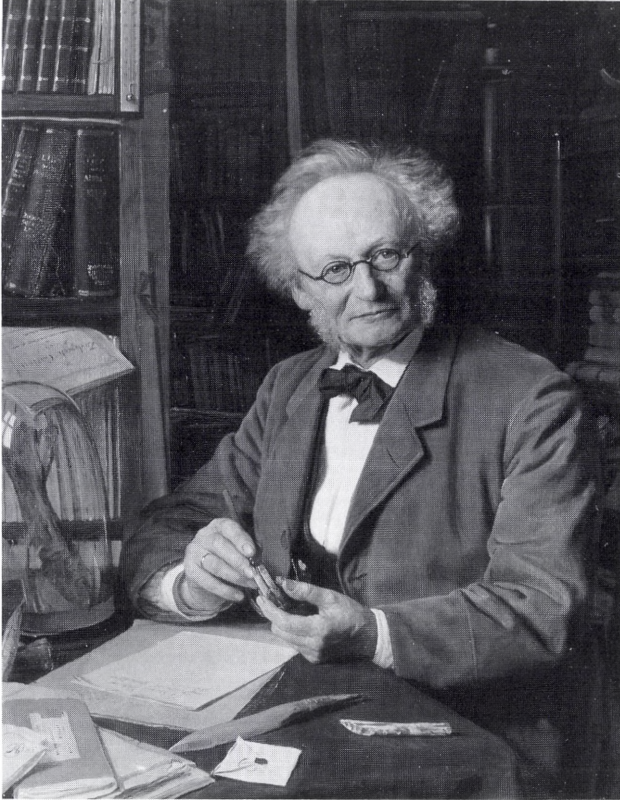
The first act of the new King was reluctantly to sign the so-called November Constitution, which was a desperate attempt to remove the Schleswig-Holstein problem by making Schleswig a part of the Kingdom of Denmark, leaving Holstein to follow its own course. This was a result of a popular pressure, but a clear violation of the London Agreement of 1852 which had approved the new law of succession on the condition that Schleswig would never be separated from Holstein. Bismarck now had a pretext for war, and in February 1864 Prussian and Austrian troops occupied the two duchies and invaded the Kingdom. The war ended in July with a complete Danish defeat, and at the Peace in Vienna in October both Schleswig and Holstein had to be ceded to Prussia, with only vague guarantees for the rights of the Danish population in Schleswig. In this way the possessions of the King were reduced by 40 per cent and the population under his rule by 30 per cent, a dismemberment of the realm that had disastrous consequences which

need not be considered here. In the academic sphere it meant that both the University of Kiel and Schumacher's old observatory at Altona were removed from Danish sovereignty. With regard to the Society the immediate consequence was only that three Holsatian members were transferred from the Danish to the foreign list.

The Secretary of the Society died suddenly 1865 December 14, and in the following January Steenstrup was elected his successor. Like Forchhammer he was a distinguished scientist and had for more than twenty years played an active role in the Society. In his first years in office several important steps were due to his initiative. Firstly he began by re-activating the dormant Statute Committee of 1856 which now came up with a proposal for reducing the four classes into two, in agreement with the original concept, but without limiting the number of domestic members, as Molbech had proposed. This proposal was adopted in November 1866, and the Society was accordingly divided into a historical-philosophical class with Madvig as chairman, and a mathematical-physical class chaired by the astronomer Heinrich Louis d'Arrest (1822-1875, elected 1858). The new structure has survived until the present day.

Steenstrup's next step was to create a proper secretariate to relieve the Secretary of some of the increasing amount of work that accumulated on his desk; it included not only the correspondence of the Society, but also the drudgery of entering the many books received into the Minute Book and the Records, and the equally tedious work of dispatching the Writings of the Society to other academies in exchange for similar publications. Even if the Society itself only rarely took the initiative for such exchanges, they grew rapidly over the years as a testimony to the improved status of the Society abroad, numbering only 25 in 1845, but 100 in 1861 and no less than 197 in 1875 [Lomh. II, 174 ff.]. To cope with this situation Steenstrup was authorized to employ two salaried, part-time assistants who, together with a messenger, formed the first staff of the Society. One of the new assistants was Steenstrup's son Johannes Steenstrup (1844-1935, elected 1882), who later became a professor of history and a member of the Society. The other was a student of zoology, Johan Lund (1844-1912), who ended his life as a rather eccentric historian of religion.

The increasing exchange business expanded the number of potential readers of the Records and Writings in other countries, whereas the number of actual readers would still be very limited because of the exclusive use of the Danish language, to which H. C. Ørsted had at-



Japetus Steenstrup (1813-1897). Seventh Secretary of the Society (1866-1878). – Painting by August Jerndorff. Courtesy of the Frederiksborg Museum.

tached so much importance. Now Steenstrup and Madvig persuaded the Society that the time had come to abandon this tradition, and in March 1867 it was decided to provide all the scientific and scholarly contributions with a summary in a major language. This had to be French, since German was out of the question after the war of 1864, and English was unfamiliar to most of the authors.

Finally Steenstrup succeeded in providing the Society with a President. There was a growing feeling that the long vacancy was irregular and undignified, and when Madvig hinted that he wished to resign as Archivist, the time for a change had come. Steenstrup put the matter on

the Agenda for a meeting 1867 April 26, at which the Society first elected the classical scholar and Madvig's former pupil Johan Louis Ussing (1820-1905, elected 1851) to the Archivist's office, and next elected Madvig the tenth President of the Society with the votes of all the 16 members who were present.

The election of Madvig was highly appropriate considering that he was both a distinguished scholar and a prominent public figure. Already as a young man he had proved his unusual mastery of textual criticism by the first of the many studies on Cicero and other Latin authors which established his European fame. Later his famous Latin Grammar ("Madvig's Grammatik", 1841) and his Greek Syntax (1846) put the teaching of the classical language on a new footing at both the school and the university level. A number of his students became classical scholars of the first water, such as Ussing and his own successor at the University, Martin Clarentius Gertz (1844-1929, elected 1883), or philologists like Ludvig Wimmer (1839-1920, elected 1876), Vilhelm Thomsen (1842-1927, elected 1876), Karl Adolf Verner (1846-1896, elected 1888), and Finnur Jónsson (1858-1934, elected 1898), who continued the great tradition from Rask and Westergaard in this particular discipline.

Outside academic circles Madvig was known as a member of the Constitutional Assembly in which he belonged to the liberal party, advocating the division of Schleswig along the language frontier. From 1848 onwards he was "Kultusminister" in several governments, always in opposition to A. S. Ørsted, besides being at one time Speaker of the Parliament, of which he was a member until 1876; in 1860 he was even asked to become Prime Minister, which he refused. Perhaps the most conspicuous effect of his public efforts was the reform of the University in 1850, which resulted among other things in a creation of a new Faculty of Science separate from the old Faculty of Philosophy, which had previously been the seat of all scientific disciplines.

Madvig's first years as President were not marked by events of great importance. In 1868 Steenstrup wished to resign as Secretary because of too much work. However, he was persuaded to continue, but in 1869 he was relieved of the task of editing the Records. This was transferred to the Archivist, who was given the more appropriate title of Editor, being now responsible for all the publications. Because of this and several earlier changes it was found that the time had come for a general overhaul of the Statutes of 1839. However, the revised version that appeared as a separate publication in 1869 followed the earlier pattern as closely as possible, taking into account only the new division into the two



Johan Nicolai Madvig (1804-1886). Tenth President of the Society (1867-1886). – Painting by Constantin Hansen ab. 1860. Courtesy of the House of Parliament.

classes, the redistribution of the respective tasks of the Secretary and Editor, and a few minor changes. It was a sign of the times that the allusion to the absolute monarchy was dropped. Where the old § 10 had stated that the President “signs all petitions and memoranda that might be addressed to the King”, it now simply said that he “represents the Society everywhere it appears in public”. It was no doubt still a Royal Society. But it had no longer any particular business with the King.

In recognition of Madvig’s work for the Society a medal bearing his name was struck and presented to him on the occasion of the fiftieth anniversary of his election. He was then almost eighty years old, but

continued in office until his death 1886 December 12, having served as President for almost twenty years. In the middle of this long period the circumstances of the Society were profoundly altered by the establishment of the Carlsberg Foundation (1876), an event the significance and consequences of which we shall consider in the following chapter.

Looking back upon the third quarter of the 19th century one is left with a feeling that the great national events were responsible for a certain slowing down of the work of the Society, at least compared with the bustling activity of the preceding period. No new projects were launched, no advice was asked for by public authorities, and even the rate of elections fell well below average. From 1848 to 1875 only 39 new members were admitted, among whom two out of every three entered the scientific class. However, in this class a new trend appeared in the growing number of first rate mathematicians, a clear signal that Danish mathematics was now recovering from its long slumber. At the very beginning of the period we notice that two outstanding contributions revealed that their authors were deeply familiar with modern methods. One of them was an *Analytisk Mekanik* (1852), in which Christian Ramus (1806-1856, elected 1834), gave a masterly and detailed exposition of Lagrangian mechanics; until now it remains the only one of its kind in Danish scientific literature. Based on these principles was also a treatise by Christian Jürgensen in which he gave a theoretical explanation of the famous pendulum experiments by which Léon Foucault had proved the rotation of the earth in 1851. This treatise was written in French and published by the Society in 1853 with the title *Sur le mouvement du pendule simple et sur celui d'un corps solide autour d'un point fixe, en ayant égard à la rotation de la terre*. Among the new generation of mathematicians was also Hieronymus Georg Zeuthen (1839-1920, elected 1872), who was destined to play a future role as Secretary of the Society. The astronomers also made important contributions by observations with the excellent, modern instruments of the new observatory which in 1860 replaced the old observatory on the Round Tower. Its director was H. L. d'Arrest, (1822-1875, elected 1858), whose large and seminal work on nebulae was published by the Society in 1867 as the *Siderum nebulosorum Observationes Havnienses*. A very impressive work was also a *Stjernefortegnelse* (Stellar Catalogue) with positions of 10,000 fixed stars determined 1861-1863 and reduced to the epoch 1865.0 by the observer Hans Carl Frederik Christian Schjellerup (1827-1887, elected 1873), and published in 1864 at the cost of the Society. Of more historical interest was an essay on Snorre Sturlassön by the Norwegian gold medallist Gustav Storm, published in 1873.

CHAPTER XV

The Carlsberg Era

The final quarter of the 19th century was inaugurated by a most unusual event that was destined profoundly to influence both the life of the Society and the general conditions of research in the country as a whole. It began in 1876, when the members were assembled on September 25 to assist at the unveiling of a monument erected in a park in Copenhagen in memory of H. C. Ørsted and paid for by a wealthy industrialist, the brewer Jacob Christian Jacobsen (1811-1887). On the same day the President received a letter which reads as follows [Lomh. I, 632f]:

To the President of the Royal Danish Society of Science,
Mr. Councillor Madvig

Here enclosed (sic) I have the honour to address to Your Excellency a respectful request to the Society of Science, asking it to take charge of a foundation which has today been established by me. As documentation I enclose the Founding Letter and Deed of Gift issued to the foundation, together with a draft of its statutes.

In vivid recognition of how much I owe to the teaching and stimulating influence of H. C. Ørsted, and as a testimony to my grateful appreciation of his efforts to spread the light of knowledge to wider circles, I have connected the establishing of the said foundation with this day which is, by the unveiling of Ørsted's monument, dedicated to his memory. I would appreciate it if my request to the Society might be made known to its members already today.

Please accept, Mr President, the assurance of the high esteem with which I remain,

Yours respectfully,
J. C. Jacobsen
Brewer

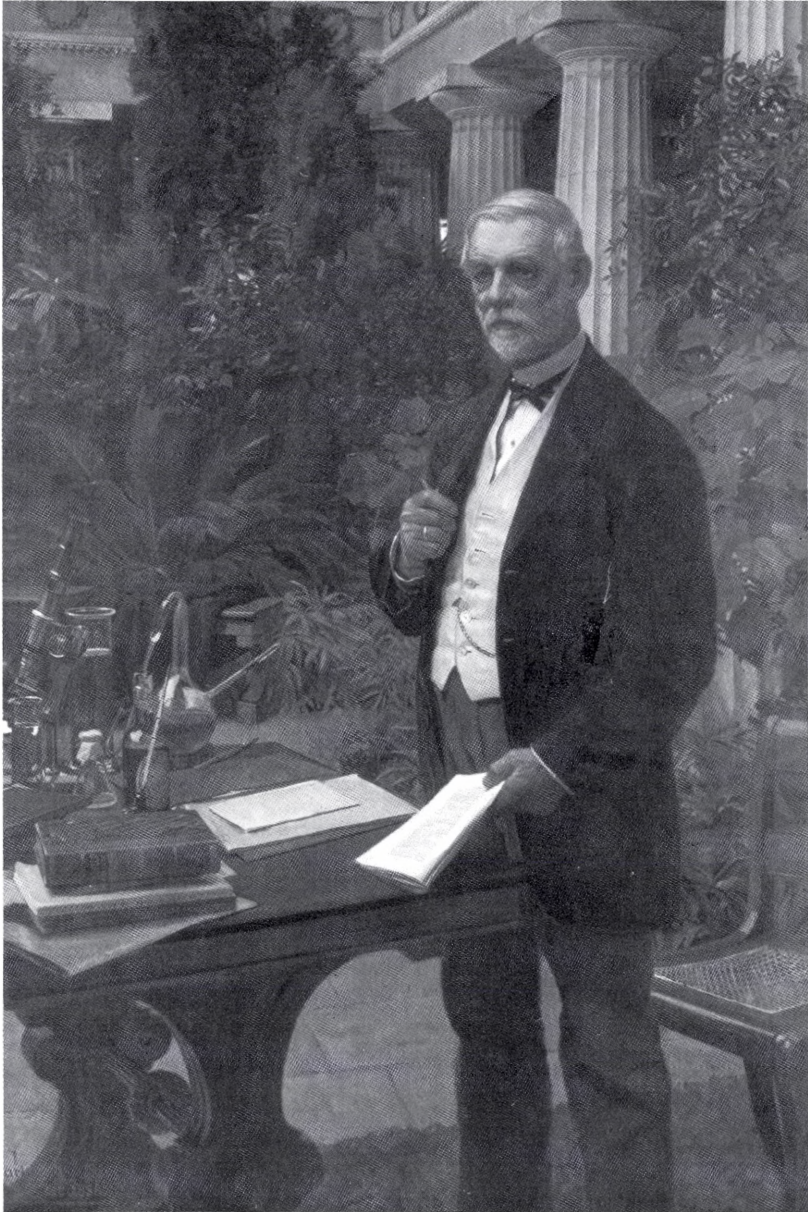
Behind this extraordinary request was one of the most remarkable industrial adventures of 19th-century Denmark. As a young man Jacobsen had inherited one of the many small breweries in Copenhagen where he had already been initiated by his father in the art of making beer, which was then in a rather poor state owing both to unreliable yeast and to the lack of competition in the association of brewers. Along with his

practical education Jacobsen also attended popular lectures by H. C. Ørsted, from whom he obtained a strong conviction that industry can improve only if technical methods are based on scientific insight into the laws of nature. Later he found a life-long, personal adviser in Japetus Steenstrup, whose cousin he married in 1840, at a time when his many experiments on fermentation of beer were in some ways crowned with success. Returning from Munich in 1845 with a sample of yeast from Sedlmayer's famous brewery he realised that he would be able to produce beer of high quality if he could get good water in sufficient quantities. This led to the foundation in 1847 of the Carlsberg Brewery in the suburb of Valby, where a long succession of technical innovations gradually revolutionised the production and made the Brewery one of the largest industrial firms in the country. In 1878 the output was no less than 80,000 barrels per year.

By this time Jacobsen had become a public figure. Already in 1833 he had helped Madvig and other young Liberals to form the Scandinavian Society, and in 1848 he was present at the meeting in H. N. Clausen's house where the address to King Frederik VII advocating a free constitution was formulated. Not surprisingly, he was elected to the Constitutive Assembly in the following year, and in 1854 he became a member of Parliament for the explicit purpose of combating A. S. Ørsted's anti-liberal tendencies. His political career lasted until 1871, when he decided to devote all his energy to his Brewery, and to his increasing activity as a generous *maecenas*, whose support made it possible to rebuild and re-furnish the magnificent Renaissance Castle of Frederiksborg, which had perished almost completely in a fire in 1859.

Brewer Jacobsen's letter to the Society came as no surprise to the President or the Secretary. As old friends of Jacobsen they had for some time been involved in the preparations for the new foundation, together with Christian Thomsen Barfoed (1815-1889, elected 1865), who was a professor of chemistry at the Royal Veterinary and Agricultural High School. In consequence, when the letter arrived on the busy day of September 25, they were able not only to circulate it immediately, but also to accompany it with a printed version of a document in which Jacobsen explained his project in more detail.

Here Jacobsen first stressed the growing dependence of industry on scientific research, admitting as a fact that scientists working at universities and similar public institutions should not be expected to go deeply into investigations of the numerous questions to which the various branches of industry needed an answer. This is the reason why



Brewer J.C.Jacobsen (1811-1887). The founder of the Carlsberg Foundation portrayed by August Jerndorff in 1886 in the "Pompeji" greenhouse of his residence at Carlsberg. On the table are (besides a bottle of beer) a microscope, some chemical apparatus, and a copy of Pasteur's work *Etudes sur la bière*, as symbols of Jacobsen's belief in the importance of science for industry.

Courtesy of the Frederiksborg Museum.

special, industrial research laboratories have emerged in other countries. Then Jacobsen continues

Guided by such considerations I have established a laboratory connected with my Brewery Carlsberg and devoted to chemical and physiological research and studies in such branches of science as are particularly relevant to the processes of malting, brewing, and fermentation, – but not only for the purpose of providing brewing technology with its daily bread and butter, but also for giving the employed scientists opportunities and means to educate themselves to act as specialists in the areas in which the operations of brewing offer a particular opportunity [Lomh. I, 634].

This passage refers to the foundation of the Carlsberg Laboratory in the previous year (1875) as the first Danish research institution of any importance outside the University. It was provided with more copious means than any public laboratory had ever possessed. It had a chemical department led by the Norwegian Johan Kjeldahl (1849-1900, elected 1890), who is still remembered among chemists for his new method of determining the nitrogen content of compound substances, and also a physiological department, where even greater discoveries were made by the director Emil Christian Hansen (1842-1909, elected 1890), who became famous as a leading expert on fermentation and yeast. It was he who succeeded in isolating a type of “pure” yeast, free from the “wild” cells that often destroyed the taste of the beer. This was the result of long and patient work, beginning with the selection of a single cell under the microscope, and cultivating it in such amounts that it could be used for practical purposes. This was another example of the usefulness of scientific methods in the brewing industry, where from 1883 onwards the pure yeast replaced the previous, unreliable forms with the result that the production could be controlled at all stages. Carlsberg was now able to make beer of a uniformly high quality without any risk of “sick” products that had to be thrown away, and Jacobsen’s investment in his laboratory was soon repaid many times, owing to a greatly increased share in a market that was now open to free competition. Jacobsen’s trust that this was sufficient to protect his own firm appears from the fact that he explicitly prohibited both the brewery and the laboratory from ever taking out a patent of any invention or development, a stipulation that has been respected until today.

However, Jacobsen also looked beyond the confines of his own industry. Continuing his account he wrote that

Since such an institute designed for special studies can thrive only if

it is carried by that spirit, and penetrated by that light which emanates from science as a whole; and since this light has been a source of happiness and contentment for me, I am anxious partially to repay my debt by contributing to the promotion of science in general, in particular in the areas where it seems to me that the state has not yet been able to provide the necessary means as it will perhaps not be able to do in the future [Lomh. I, 634].

Such were Jacobsen's ideas of his Foundation, and in the last part of his account he briefly explains why he now called upon the Society instead of approaching an industrial or technical association. His step was motivated by the conviction that

If such a foundation is to function according to its aim, it must be made safe by a permanent board of directors possessed of scientific insight and ability. What necessarily comes into mind from this point of view is that Society in which until now and certainly also in the future Danish science will find its most prominent representatives, and which is among us the only institution that has the good fortune of being independent of all foreign, non-scientific consideration and influences, namely, the Royal Danish Society of Science [Lomh. I, 635].

What these idealistic principles meant in practice was made clear in the Deed of Gift which was also dated 1876 September 25 [Lomh. I, 635-637]. The foundation was to be known as the *Carlsberg Foundation*. It was given an original capital of one million kroner in the form of a mortgage on Jacobsen's estate at Valby, on which he would pay a rate of interest of two per cent per annum, to be raised to five per cent after the death of himself and his wife. This would provide the Foundation with an annual income of 20,000 kroner at the beginning and 50,000 kroner at a later date, to be used for two definite purposes,

A: To continue and expand the work of the Carlsberg Laboratory.

B: To promote the various sciences of nature, together with the disciplines of mathematics, philosophy, history, and philology.

Thus two humanistic disciplines were included despite their lack of immediate relevance for industry and technology. Considering Jacobsen's personal interest in the history of Denmark there is no reason to suppose that it was not his own idea to mention history as worthy of his support. With respect to philology one might suspect Madvig to have influenced the donator. On the other hand Jacobsen would certainly have realised that the Society might have been reluctant to accept a gift from which only one of its classes could profit. Therefore, it is more reasonable to

suppose that when Jacobsen mentioned history, philosophy and philology he simply meant the disciplines of the historical-philosophical class. In other words, the intention was to provide for all the disciplines that were traditionally represented in the Society.

This takes us to the relationship between the Society and the Carlsberg Foundation as defined in the statutes which were presented only in the form of a draft, pending the approval of the Society [Lomh. I, 637-639]. Here Section V stipulates that

The Foundation shall be governed by a Board of five Directors, elected by the Royal Danish Society of Science from among its own members for periods of ten years, one member resigning every second year.

The actual composition of the Board must agree with Section VI, according to which three of its members are made responsible for the Carlsberg Laboratory. It follows that they must be scientists. There is nothing in the Statutes that prevents the two other members from being scientists too; however, from the beginning it has always been an unwritten law that two of the members are taken from the historical-philosophical class of the Society, so that the two classes are represented on the board in roughly the same proportion as in the Society.

Having defined the purpose of the Laboratory (Section A of the Foundation) the Statutes list the five purposes that can be supported by the means allocated to section B; they are

- a) Travel grants to older scientists for shorter or longer visits to other countries aiming at developing science in Denmark;
- b) Interim salaries for younger scientists, whose intelligence and inner vocation make them particularly fit for subsequent public activity;
- c) Salaries for life, or for a limited period, for distinguished men [women are not mentioned] who are able fruitfully to work as "free scientists" untrammelled by public duties;
- d) Stipends or fees for special studies or investigations;
- e) Grants for the promotion of scientific works [i.e. publications].

In translation such clauses may give the impression that Jacobsen wished to support only "science" in the strict sense of the word. However, the corresponding term in Danish ("videnskab") is more comprehensive and includes humanistic studies as well as natural or mathematical investigations. It follows that the Statutes provide for support of all the disciplines represented in the Society, as was mentioned above. On the other hand, the Statutes make it very clear that the Foundation is to

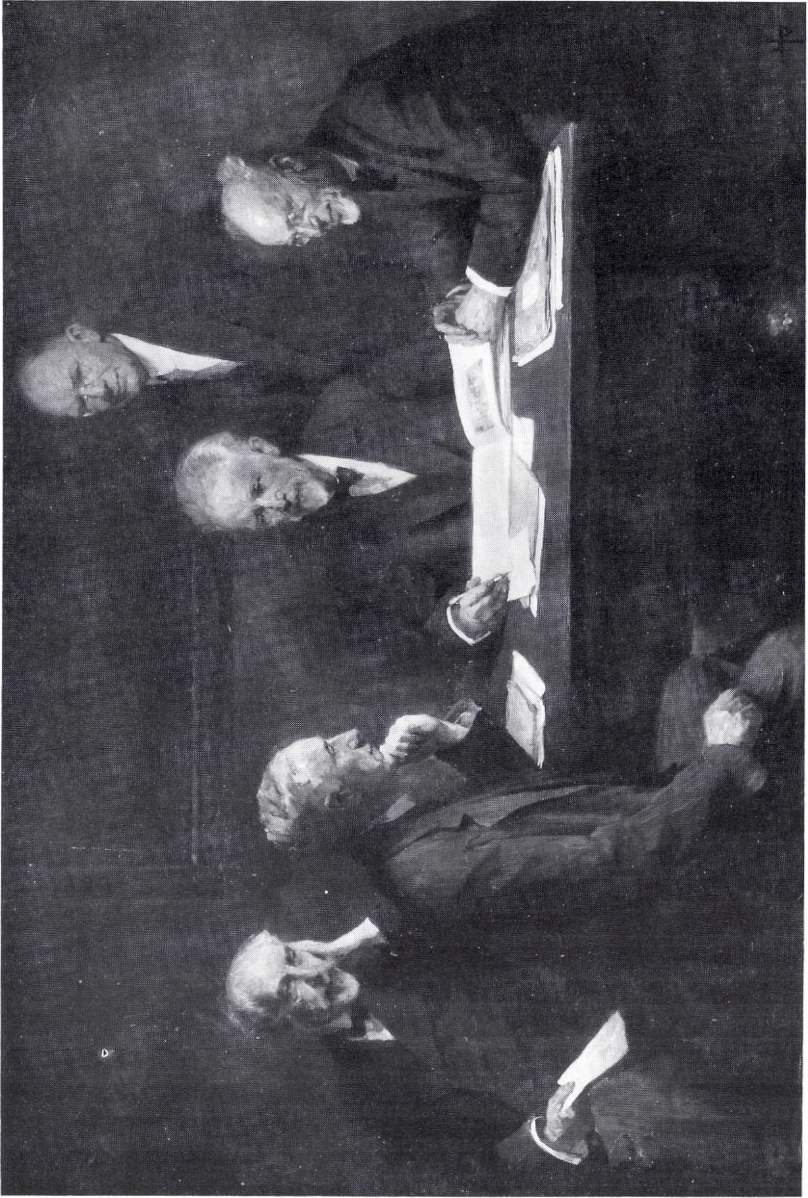
support research done by members and non-members without any difference (end of Sect. IX). The special mention of young people shows that Jacobsen was fully aware that the Society was after all an association of established scholars and scientists. That they were now made responsible for channelling his money into more extended circles is a pleasant testimony to his confidence in their judgment and probity.

Four days after the reception of Jacobsen's letter 29 members of the Society gathered at an extraordinary meeting to discuss his offer (1876 September 29). Here the proceedings were very brief. The President warmly recommended that it be accepted, considering

the extreme generosity of the gift and the patriotism it expressed together with the recognition of the internal connection between science and practical activity [Lomh. I, 630].

Madvig was seconded by the senior member of the assembly, Henrik Carl Bang Bendz, who was now the director of the Royal Veterinary and Agricultural School, as Madvig was rector of the University. No other members spoke, and Madvig's motion was carried unanimously. Jacobsen was immediately informed by letter, and a few days later Madvig and Steenstrup were received in audience by King Christian IX, who approved the Statutes of the Carlsberg Foundation in the precise form in which they were drafted. This seems to have been the first contact between the Society and its protector. Shortly afterwards the King paid an informal visit to Jacobsen in order to thank him for his benevolence; he no doubt disappointed the old brewer by having no time for a visit to either the brewery or the Laboratory.

At another extraordinary meeting 1876 October 27 the Society elected the first Board of Directors of the Carlsberg Foundation. They were Madvig, Steenstrup and Barfoed, who had all been involved in the preparations, the historian Peter Edvard Holm (1833-1915, elected 1867), and the anatomist and physiologist Peter Ludvig Panum (1820-1885, elected 1859). When the new Board met for the first time at the beginning of November, Madvig was elected chairman of the Foundation as a whole; he served in this capacity until his death in 1886, when he was succeeded by Barfoed, the philologist J.L. Ussing being elected in his place. According to the Statutes Steenstrup, Barfoed and Panum were responsible for the Carlsberg Laboratory, together with two assessors appointed by the Society, but not members of it. They had to be either experts on brewing, or familiar with the research of the Laboratory. Not surprisingly, the two first assessors were Brewer Jacobsen himself and his right hand and partner Erhard Kogsbølle.



The Board of Directors of the Carlsberg Foundation at its 50th anniversary 1926. From left to right are the physiologist Valdemar Henriques (1864-1936), the mathematician Johannes Hjelmslev (1873-1950), the historian Kristian Erslev (1852-1930, Chairman of the Board), the botanist Carl Emil Ostenfeld (1873-1931), and the classical scholar Anders Bjørn Drachmann (1860-1935). — Painting by Herman Vedel (Reading Room of the Society).

The establishment of the Carlsberg Foundation had two immediate consequences for the Society. In the financial area it meant a new and assured source of income. Until then its economy had been based on irregular grants from the government, usually given for specific purposes and occasionally making it possible to save and invest the surplus. In this way Hielmstjerne had accumulated a capital which in 1772 amounted to 25,000 Rbd. In 1780 it had grown to 45,000 Rbd., in 1838 to 100,000 Rbd., and in 1875 to 280,000 kroner after the introduction of the new coinage, according to which one Rbd. equalled two kr. With an average rate of interest of 4½ per cent this gave the Society an annual income of about 12,000 kr., to which should be added a relatively small amount derived from the sale of publications. The actual value of this amount may be illustrated by the fact that the annual salary of an ordinary professor at the university was about 4,000 kr., while for instance skilled workers earned from 600 kr. to 1,000 kr. per year.

Moreover, the Society had a number of minor funds at its disposal. At his death in 1782 Count Thott left the Society the sum of 2,500 Rbd., the interest on which was to be spent on awards for Prize Essays on agriculture and forestry [Lomh. I, 59of.]. Ten years later the industrialist Johan Frederik Classen left an annual grant of 200 Rbd. for similar purposes, while a grant of 50 Rbd. per year from the estate of the customs official Jacob Henrik Schou (1745-1840) could be freely used for any purpose. Much more important was the Society's share of the proceeds of the Hielmstjerne-Rosencrone Foundation, created in 1811 by Hielmstjerne's childless son-in-law Count Marcus Rosencrone (1738-1811, elected honorary member 1810), who left a considerable fortune in support of cultural activities in Denmark and Norway. It became operative in 1862, and in 1874 the Society received 1250 kr., an amount that rose steadily in the following years. Although it was not earmarked for specific purposes, it has more often than not been spent in support of research or publications in the area of the humanities.

A rough estimate based on the figures quoted above shows that about 1876 the Society disposed of about 12,000 kr. derived from its own capital, plus two to three thousand kr. from the smaller foundations. Now the Carlsberg foundation provided another 20,000 kr. per year, half of which went to its Class B (general purposes of research), while the other half was allocated to the Carlsberg Laboratory. This meant that the 10,000 kr. which the Society was able to spend on research from its own means were now equalled by a similar amount distributed by the Foundation. It goes without saying that this meant a drastic

improvement of the research situation in the country; a further improvement occurred in 1881, when Brewer Jacobsen doubled the basic capital of the Foundation to two million kr. This increased the interest to about 100,000 per year, of which Section B received 40,000, an amount in comparison with which the Society's own means became even more insignificant.

The second consequence followed from the first. The Foundation was able to support many more projects than the Society, which was somewhat relieved from the pressure of selecting appropriate projects from the ever growing heap of applications, a fact which from now on saved much valuable time at the meetings. In many cases the Foundation also came to the assistance of the Society as such with grants for important purposes, for which sufficient means were not at hand.

The original set-up of the Carlsberg Foundation did not last long. Already in 1878 it was entrusted with a new task, – the management of the Museum of National History established at Frederiksborg Castle, which was now completely restored, to a large extent with means granted by Brewer Jacobsen. For this purpose an amount of 200,000 Kr. was added to the basic capital of the Foundation, of which the Museum now became the third department (C). However, the Museum has a separate Board of Directors with a chairman elected by the Society from among the members of the Board of the Foundation.

But Jacobsen had more surprises in store. In 1881 he suddenly added another million kroner to the basic capital of the Foundation, which now amounted to 2,200,000 kr. This provided an annual interest of 110,000 kr. of which 40,000 kr. was put at the disposal of department B for general purposes of research. But the most sensational change took place in consequence of Jacobsen's quite unexpected dispositions in his will of 1882. It contained the famous "Golden Words", later inscribed on a stone tablet at the Brewery and stating that

The constant purpose of the management of the Breweries is, – without regard to short-term advantages – to develop the production to the greatest possible perfection, so that these Breweries and their produce can always remain an example helping to keep the production of beer in Denmark at a high and honest level [Lomh. I, 646).

This had always been Jacobsen's aim. But it was certainly an unexpected step to further it in the future by transferring the ownership of his complete estate to the Foundation. This changed the nature of the Foundation in the most radical way. From being an ordinary fund with a

fixed income derived from a well-defined capital it was now made responsible for a large industrial company with all the risks and possibilities this involved. After Jacobsen's death at Rome in 1887 the transfer was effectuated in October 1888. A further extension of this growing economic empire – as it proved to be – took place in 1902, when Jacobsen's son, Carl Jacobsen (1842-1914), made his own New Carlsberg Brewery over to the Foundation, establishing also a separate New Carlsberg Foundation for the support of the fine arts. The breweries at Valby were now united into a single company, which from 1906 until his death was managed by Carl Jacobsen.

To Jacobsen's estate belonged also his sumptuous villa in the grounds of the Old Brewery. In the testament it was left to his son for life, after which it was to be used as an Honorary Residence for

a man or woman deserving of esteem from the community by reason of services to science, literature, or art, or for other reasons.

The Foundation was charged with the upkeep of the residence, but the honorary resident was to be appointed by the Society. This distinction was first conferred upon the philosopher Harald Høffding (1842-1931, elected 1884), who lived in Jacobsen's former home from 1914 until his death. He was succeeded by Niels Bohr (1885-1962, elected 1917), who died here in 1962, being followed by the archaeologist Johannes Brøndsted (1963-1965), the astronomer Bengt Strömgen (1966-1987), and the sinologist Søren Egerod (b. 1923, elected 1971).

Brewer Jacobsen's concept of the relations between science, technology, and society were not completely new at the time when he created his Foundation and wisely based its economy on a product the demand of which has shown no tendency to decrease. Other industrial companies have since followed his example, as names like Ford and Rockefeller have shown. But his idea of giving a learned society of a very general nature the ultimate control of the industrial base of the foundation was certainly highly original and courageous. Posterity has realised that his faith in this unusual arrangement was well founded. The intimate connection between the Foundation and the Society was advantageous to both parties. The fact that the Board of the Foundation are members of the Society has given this Board a broader contact with the world of science and learning than any other construction might have provided, thus increasing the opportunity of coming to the assistance in areas where support would be most needed, in particular by younger talents. On the other hand the Board has always been careful never to implicate the Society as such in its decisions, and has also avoided giving its

members any preferential status with respect to its grants. In many cases it has collaborated with other learned societies, other foundations, or with the state, when one or another project proved to be too heavy for a single sponsor.

It would be futile here to consider the work of the Carlsberg Foundation in any detail. It has covered a highly catholic range of activities, from arctic research in Greenland, ethnographic expeditions to other continents, archaeological excavations at home, in the Mediterranean and in the Middle East, and oceanographic explorations of all the Seven Seas, over the more routine work of providing scientific institutions with instruments and personnel, to the publishing of monumental reports, editions of dictionaries and rare texts, and a multitude of monographs by scholars in all fields, including also non-academic or "lay" researchers or students. What the Foundation has done for the Society as such will be abundantly clear in the following chapters.

For about forty years the Carlsberg Foundation was almost the only, and certainly the most potent, independent sponsor of science and scholarship. It was not until 1919 that the state relieved it of some of the burden by creating the *Rask-Ørsted Foundation* in order to promote international collaboration between Denmark and other countries after the ravages of World War One. More relief came in 1951 with the establishment of a governmental Foundation of Research called *Statens Almindelige Videnskabsfond*. But neither these nor a number of new industrial foundations have diminished the demands on the Carlsberg Foundation.

It is impossible to know to which extent Brewer Jacobsen foresaw this bustling activity when he established his Foundation and entrusted it with the running of one of the largest industries of the country; but there can be no doubt that he would have appreciated it, — as he appreciated the only personal distinction for which he ever really cared, the honorary degree conferred upon him by the university in 1879 in recognition of his services to the scientific welfare of his country. It would have been natural to invite Brewer Jacobsen to become a member of the Society; but there is no evidence that this ever happened.

CHAPTER XVI

Into the New Century

As Secretary of the Society, and a personal friend and adviser of J.C. Jacobsen, Steenstrup had been very much involved in the preparations for the Carlsberg Foundation, on the first Board of which he served from the beginning in 1876. In the following year he was often ill, and in 1878 he found that his double role was too heavy a burden. Preferring to devote his energy to the Foundation, he resigned as Secretary as from 1878 September 30. When this was announced in April of the same year the mathematician H.G. Zeuthen was elected in his place by 22 votes out of 33. At the end of the statutory five-year periods he was unanimously elected again and again until he resigned 1917 October 1 after no less than 39 years of service, a record that has not been beaten either before or since.

Already in his student days Zeuthen had been known as a promising mathematician for his contributions to the new *Mathematisk Tidsskrift* (Mathematical Journal) founded in 1859 and later edited by Zeuthen from 1871 to 1889. His studies in Paris with the French geometer Michel Chasles (1793-1880) were interrupted by the war in 1864, in which he served as a gunner, but became decisive for his own fruitful interest in geometry, which was soon supplemented by his devotion to the history of mathematics. Two of his major historical works appeared in the Writings of the Society. The first was a pioneer work on the theory of conic sections in Antiquity (1884), which gave the historical background of his dissertation from 1865. The second followed many years later, being an account of how geometry developed into a rational science from Plato to Euclid (1917). In between he had published his two volumes of lectures on the history of mathematics (1893-1903), a subject on which he was now a prominent authority in international circles. Zeuthen also became an excellent Secretary, and it fell to him to be in charge of the great changes through which the Society was carried into the 20th century, in close collaboration with a new and energetic President.

When Zeuthen became Secretary Madvig was 74 years old, but still at the height of his powers. His services to the Society were many. After

the long vacancy 1860-67 he had restored the image of the President of the Society as a scholar of international distinction. Later he had worked hard to set up the Carlsberg Foundation, of which he was the first chairman, thus performing a twofold duty which no other President has been asked to assume. When he had been a member for fifty years, the Society expressed its recognition of his achievement by presenting him with the first issue of the new Madvig Medal in gold, and by a special meeting 1884 January 11, where he addressed the members with his "Remarks on Causality and Freedom" [Lomh. I, 82ff.; cf. Records 1883, 47ff.]. His death 1886 December 12 was announced by Zeuthen, who expressed in very personal terms both the common respect for Madvig's scholarship and the general appreciation of his kind and gentle humanity.

He was the best listener at our meetings (...) and we loved him more, the more we came to know his warm heart, which contained not only a lively interest in everything human, but also an active love of human beings (...) Many in this room must like myself have experienced the great extent to which Madvig shared our joys and sorrows as if they were his own [Lomh. I, 468].

After Madvig's death it was decided to postpone the election of a new President until after the Statutes had been overhauled and adapted to the present needs and customs of the Society. This procedure lasted a full year, causing much disagreement among the members. The new Statutes were finally adopted 1888 April 20. They changed the status of the President, who was now defined as the Head of the Society, but no longer classed among its four officers. A proposal to limit his period of office to one year was rejected owing to strong objections from Steenstrup and others, and the usual five-year periods were retained. At the following election 1888 May 4 Steenstrup obtained 16 out of 19 possible votes, but declined the honour, feeling unable to assume new duties at the age of 75. A new election on May 18 gave 16 votes out of 23 to the chemist Hans Peter Jürgen Julius Thomsen (1826-1909, elected 1860), who accepted and thus became the Eleventh President, remaining in this office until his death in 1909.

Julius Thomsen had had a long-standing connection with the Society, which had given him a Silver Medal in 1852 for a paper on thermochemistry, the first of a long series of brilliant, experimental investigations of the heat produced or absorbed in chemical reactions. Just before his election he had published four volumes of *Thermochemische Untersuchungen* (Leipzig 1882-1886), which established his international fame in

an area of research that was as important to theoretical as to industrial chemistry. His preoccupation with the latter subject had, already in 1853, caused him to found a factory in Copenhagen for the utilization of the rare Greenland mineral cryolite, the success of which had made him a wealthy man.

As President Thomsen continued his scientific work with unabated energy. His re-arrangement of the periodic system of the chemical elements enabled him to predict the existence and properties of most of the inert gases (1895) before they were discovered in nature by other chemists. Being also active in politics as a member of the City Council of Copenhagen (1861-1894) and in administration as Director of the Polytechnic University (1883-1902), he was in many ways a scientific counterpart to Madvig and certainly worthy of succeeding him in the chair of the Society.

Thomsen's firm grasp of administrative affairs was of great importance during the drastic change of the general circumstances of the Society, to which we shall return below. It also profited by his industrial activity in so far as it received in 1899 a considerable donation of kr. 100,000 from the estate of the business man Ole Bernt Suhr (1813-1875), who had been his partner in the Cryolite Company. The bequest was given in recognition of Thomsen's contributions to chemical industry and trade, and was to be used for the general purposes of the Society, at the discretion of its President, without further restrictions [Lomh. I, 612-615]. This no doubt strengthened Thomsen's authority in the Society. But his strong temper and masterful mind sometimes clashed with the opinions of other members, leading to a number of confrontations from which he always emerged victorious. However, this did not quench the opposition, and his reelections in both 1898, 1903 and 1908 revealed the existence of an opposition which each time tried in vain to replace him with the comparative philologist Vilhelm Thomsen (1842-1927, elected 1876).

During fifteen years of Thomsen's presidency the Society was constantly occupied by the problem of its premises. As mentioned in Chapter VII, the Royal Rescript of 1774 had promised that the King would always provide the Society with suitable rooms. This promise had been honoured also by the constitutional government with the result that since 1854 the Society had been housed in a set of rooms in Prinsens Palæ, where the National Museum was in the process of formation. Here much re-decoration took place in 1883 at the cost of the Society itself. A new situation emerged in the following year when Christiansborg Palace



Julius Thomsen (1826-1909). Eleventh President of the Society (1888-1909). – Painted by Carl Bloch. (The Frederiksborg Museum).

burned down for the third time. This led to a general scare of fire in public buildings, and 1884 October 10 the Kultus-Minister (of Ecclesiastical and Educational Affairs) asked the Society to vacate its offices and archives (but not its meeting room) within a fortnight, during which time both the kindling of light and fires, and the smoking of tobacco, was absolutely forbidden. The archives were immediately removed to rented rooms in a neighbouring street, and the Society obtained an annual grant of kr. 1,600 to cover the rent. It was more difficult to find a new location for the offices, and it was also highly inconvenient to have the activity of the Society spread at different addresses. Nevertheless, the matter

dragged on, and the offices remained in use for several years, presumably with both lights and fires in winter.

In 1891 the Ministry was considering a rebuilding of Prinsens Palæ for the purposes of the Museum, and the Society was again at the risk of being ousted from its premises. Finding prevention better than cure, it informed the Ministry 1891 May 6 that it needed

a meeting room with an ante-room, at least two spacious rooms for the meetings of the Classes, an office, and an adjoining room for housing the Archives and the stock of the publications of the Society,

adding the reminder that

For more than a century the Society has had premises in Palace Buildings of the State according to a Royal Rescript of 1774 October 5, so that it has felt no need of an independent building. If this right is now going to be definitely exchanged for a compensation, the Society must seriously request that this compensation should not be an annual grant of money, but that the State provides the Society with a building that suits its purpose [Lomh. II, 518].

The wording of this document reveals that the abolishment of the absolute monarchy had changed the style of official correspondence with the government. The wishes of the Society are no longer put forward in the form of a "humble petition", but as an "urgent request". Moreover, the idea of having not only a set of rooms, but a house of its own, shows that the Society was more certainly convinced of its future role than before. One may safely assume that this had something to do with the new partnership with the Carlsberg Foundation.

As a suitable building the Society pointed to a house in Ny Vestergade. It was owned by the University and had been used since 1859 for the chemical laboratory where Thomsen had worked until 1892, when the departments of chemistry, geology, and mineralogy were united in a spacious, new building close to the Observatory at Østervold. Now the house was empty, and Thomsen used his influence as President of the Society and Rector of the University (1881-1892) to persuade the Minister to donate it to the Society. It was very probable that this would have happened if the situation had not suddenly changed in a rather dramatic way.

On 1893 October 6 the Society received a letter from the Carlsberg Foundation referring to the "passing storm" of two years ago, and to the desirability of acquiring "larger rooms for our (sic) meetings", – a slip of the pen that reveals how strongly the Board of the Foundation still



The mansion at 35, H.C. Andersen's Boulevard, designed by the architect Vilhelm Petersen (1830-1913) and completed in 1899. The Carlsberg Foundation has its offices on the ground floor, the rest of the building being at the permanent disposal of the Society.

identified itself with the Society. The letter further announced that the Board had decided to establish a common headquarters for the Foundation and the Brewery at a newly acquired site in Copenhagen, and that

In this ornamental building it intends to adapt the first and second floors to the use of the Society of Science. Here everything may be collected and arranged in agreement with the needs of the Society, and the Board wishes to do its best to obtain for the Society a beautiful and comfortable home which it can preserve for ever [Lomh. II, 520]

This generous offer was accompanied by two conditions. First, it was stipulated that Langebek's old Society for Danish History was to share the meeting room with the Society, as it had already done for many years; this presented no problem. Secondly, the Board presumed that the government would continue to honour its old obligations by means of an annual grant to the Society. This made it imperative to apply to the Minister, the jurist August Carl Goos (1835-1917, elected 1882), who fortunately was a member of the Society, for which he tried to obtain kr. 4,000 on the next budget. This met with opposition in Parliament, and it was not until 1898 that the Society received kr. 1,500 in commutation of the kr. 1,600 it had previously received, an arrangement which continued until 1919. In the meantime the problem had become less urgent in consequence of the annual grant of kr. 10,000 from the Foundation, which the Society received from 1896 onwards.

However, even before the Society had clarified its relations with the state it had provided the Foundation with a detailed list of the numbers and sizes of the rooms it required, and also approved a sketch plan of the new building made by the architect Vilhelm Petersen (1830-1913). The offer was formally accepted at a meeting 1894 April 27, and the construction began soon afterwards. It was finished in 1898, and the legal matters were regulated by a registered deed conveying the right of use of the first and second floors of the house to the Society to be enjoyed *in perpetuum* free of rent, and with heating and electric light paid for by the Foundation together with the general maintenance of the building.

The new home of the Society was a noble and beautiful building, placed on Vester Boulevard (now H. C. Andersen's Boulevard) just opposite the New Carlsberg Glyptothek, a sumptuous museum erected in 1892-1897 by the state and the municipality to house the rich collection of art which Brewer Carl Jacobsen had donated to the public. Here the Foundation built its house, in the form of a rectangular building measuring 30 by 19 m and designed on a strictly symmetrical principle

which made it seem monumental without being heavy. The material was granite and grey sandstone, with a lavish use of beautiful Italian marble for internal walls and staircases. Above the high basement the ground floor reserved for the Carlsberg Foundation was entered through a marble hall from which a great marble staircase leads to a vestibule on the first floor around which the principal rooms of the Society were located. They comprised a spacious assembly hall, two rooms for the Classes, each with an ante-room one of which was adapted for serving tea. Smaller and rather cramped staircases led to the second floor where the Society for the first time got a suitable range of offices for the President, Secretary, Editor, Treasurer, and the clerical staff, together with store rooms for the Archives and the publications. The great loft above was not utilized, but remained as a reserve for future extensions. Strangely enough a separate room for a library was omitted. But contrary to many other academies the Society had never acquired any collection of books, presumably owing to the narrow premises it had previously possessed. Now its own publications were placed in one of the ante-rooms on the first floor; but no provision was made for either a reference library or for the growing number of publications written and donated by the members.

With respect to the furniture practically everything had to be acquired anew. In a rather petty way the Ministry claimed all the previous belongings of the Society as state property, allowing it to keep only its 36 old gilt leather chairs, until in 1914 they were claimed by the Ministry for the National Museum and in 1919 handed over to it with much regret, all attempts to preserve them as a memory of the past history of the Society having failed.

On the other hand the new premises made room for the many works of art that had been acquired over the years, beginning with a portrait bust of Hielmstjerne from 1781, and original painted portraits of Holstein, Schimmelmann, and Hauch, supplemented by copies of paintings preserved elsewhere. The place of honour was given to a very fine copy of a bust of Brewer Jacobsen, made in 1865 by the sculptor H. V. Bissen. It is placed on the landing of the great staircase, from where it looks up towards a similar bust of the founder of the Society, Hans Gram, placed in the vestibule of the first floor, where he seems to welcome the members as his personal guests.

In a special category is a large painting (267 by 518 cm) which the Carlsberg Foundation commissioned one of the best portraitists of the country, P. S. Krøyer, to paint. It represents a meeting of the Society in

the old room at Prinsens Palæ where all the 51 members in 1895 (with one single exception) are depicted as listening to a paper by Japetus Steenstrup. It is a free composition, since no single meeting has ever been attended by all members. But it was based on penetrating portrait studies and is as such of considerable historical interest. Finished in 1898, it was first placed in one of the class rooms in the new building, then in another, until it finally found a presumably permanent place in the assembly hall, where it now forms a suggestive and inspiring background to the meetings.

The acquisition of the more spacious premises had some slight effect on the number of domestic members which throughout the 1890's remained at the level of 50. Contrary to what several members had suggested, the new Statutes of 1888 had explicitly decreed that no limiting number was to be defined in the articles; but there was also a feeling that the membership should not be allowed to increase. In fact, no elections took place between 1893 and 1898. This stagnation ceased after the move to the new house, when a number of "great elections" from 1898 to 1903 made room for no less than 27 new members, after which the annual intake fell again to the traditional average of two. The total number had now risen to about sixty, and both Vilhelm Thomsen and several others found that the time had come to put the brakes on. In 1903 they proposed to limit the historical-philosophical class to 30 and the mathematical-physical class to 40 members, while in 1908 the President argued that 28 and 37 respectively were more appropriate figures.

The reasons given for this attitude were both the limited space in the assembly hall, and the customary practice of many foreign academies. Strongly against this proposal was the historian Johannes Steenstrup, who wished to keep the Society as open as possible for all qualified representatives of the academic world, pointing to the inevitable stigma attaching to the failure of being elected; this was met with the argument that there could be no stigma if a candidate was not rejected on grounds of merits, but only because there were no vacant seats. The philosopher Harald Høffding supported Steenstrup's views in principle, although in the end he voted against them. When in 1909 the Statutes were again revised, the result was a vague compromise. No limiting number was introduced, but the Society decided "temporarily" to keep the membership at the "usual" level as this was ascertained over five-year periods. This made only a very slow expansion possible, and the question remained a rather hot subject for many years to come.

With regard to the membership an unexpected step was taken by the

President, who in 1894 proposed reviving the class of honorary members that had been abandoned by the Statutes of 1839. According to Julius Thomsen the Society ought to be able

on the proposal of the President to admit as extraordinary members such men outside the circle of professional scholars and scientists as may be supposed to work for the purposes of the Society in consequence of their position in society and their scientific interests [Lomh. I, 345].

Knowing what the President had in mind, a special committee made this more explicit by proposing that

At the proposal of the President the Society may invite members of the Royal House to join the Society as extraordinary members [Lomh I, 346].

This was adopted at a meeting 1894 March 9, the word "extraordinary" being changed to "honorary", and the number of honorary members being restricted to three. Three weeks later this amendment was applied for the first time. The President was authorized to invite Crown Prince Frederik (1843-1912), who became the first honorary member to be elected since 1815. Unlike King Christian VIII, the Prince had no definite scientific or scholarly proclivities, and it is not clear why Thomsen wished to include him in the ranks of the Society. However, he had no reason to regret his initiative. As Crown Prince the new member attended no less than 61 meetings (about one third of the total number) and after he ascended the throne in 1906, he found time to visit the Society on at least a score of occasions. Not all ordinary members were as frequent attenders.

While the move to the new premises did not change the membership very much, it certainly contributed to giving the meetings a more attractive form. The new rooms were spacious and elegant, and the growing rate of attendance clearly revealed that the members appreciated their new comfort. During the 1890's it rose from a poor 35 per cent to a peak of about 60 per cent just after the inauguration of the new building, which took place at a festive meeting 1899 March 24 [Lomh. II, 526f.], after which it remained at the almost constant level of about 50 per cent during the first two decades of the new century.

Contributing to this greater interest was no doubt also the fact that the meetings concentrated more than before on purely scholarly and scientific matters. Much of the tedious business of evaluating proposals and discussing applications had disappeared, when the Carlsberg Foun-



Bust representing Hans Gram by A. V. Saabye after a painting by J. S. du Wahl 1743. It occupies a place of honour in the vestibule on the first floor above the great staircase.

dition gradually assumed this role, on which the Society had spent so much of its time for more than a century.

Last, but perhaps not least, there were also more material reasons of a pleasant nature for the increased attendance at the meetings. Already in 1893 Zeuthen had proposed that the new premises ought to include a combined common and dining room where the members could gather in an informal way. This suggestion was only partially met by the facilities for having tea in one of the small ante-rooms. Nevertheless, on the evening after the first meeting at the new house the Society was for the

first time host at a supper which was served in one of the class rooms. This started a tradition that has been kept up until the present day and is not likely to be abandoned again. The new form of social conviviality proved to be a welcome opportunity for stimulating conversation in small circles, forming spontaneously across the frontiers between the various disciplines. In this perspective it is of course highly important to preserve the custom that all meetings are plenary sessions of both the humanistic and the scientific classes. This is not a common feature of other learned societies, but offers valuable opportunities for fruitful interaction for people who are, in their professional work, increasingly confined to their own institutes or laboratories.

Apart from the ordinary meetings the Society met in Zeuthen's period on a number of special occasions, of which a few deserve to be mentioned. Compared with the solemn festivity in the great Hall of the University at the centenary of the Society in 1842, its 150th birthday was celebrated in a more modest way, no doubt owing to the somewhat strained relationships with the Government. However, on 1892 November 18 no less than 48 members gathered in the usual room at Prinsens Palæ, which was "gaily illuminated by the candles on four magnificent candelabra presented by the President on the occasion of the jubilee" [Lomh. I, 474]. For once King Christian IX was also present. After a speech by the President, the historian E. Holm gave an interesting lecture on the early history of the Society [Records 1892, 65ff.], and afterwards the President invited the members for supper at his home. This was the first social gathering of the Society on record, and it was perhaps here that Zeuthen conceived the idea of his suggestion in the following year. In the outside world the anniversary was marked only by a printed bibliography of its publications from 1742 to 1891; it was compiled by the young orientalist Dines Andersen (1861-1940, elected 1908), whose name we shall meet also in another connection.

Another notable meeting was held 1901 October 24 to commemorate Tycho Brahe, - 300 years to the day after the death of the famous astronomer in Prague. The initiative came from a new member, Johan Ludvig Emil Dreyer (1852-1926, elected 1901). Like several other Danish astronomers after him, Dreyer had made his career abroad, being now Director of the Armagh Observatory in Ireland, and also the author of an English biography of Tycho Brahe which remained a standard work for almost a century (1890). Being presumably the only domestic member who never attended a single meeting, Dreyer was also absent on this occasion, on which numerous members, and also the King and the

Crown Prince, listened to the historian Julius Albert Fridericia (1849-1912, elected 1888) speaking on "Tycho's personality and intellectual character", and to the Copenhagen astronomer Carl Frederik Pechüle (1843-1914, elected 1893), who dealt with "Tycho Brahe's new star in relation to his reform of astronomy" [Lomh. II, 71 f.].

The Brahe meeting in 1901 had interesting consequences. Firstly, it was the precursor of several similar commemorations of a great figure of the past as, for instance, the meeting held in 1946 to mark the third centenary of the birth of Ole Rømer, or the meeting in 1973 to honour the memory of Copernicus. Secondly, it was the first meeting which was explicitly devoted to the history of science, – an emerging, new discipline which the Society now helped to promote by means of a change of its publication policy.

While the regular publication of the Records and the Writings continued as usual, there were significant changes with regard to the special publications. For almost a century the project of the Danish Dictionary had been a heavy burden on the mind of the Society. Everybody knew that it was hopelessly out of date, and it was difficult to conjure up sufficient enthusiasm for its completion. By 1878 the Dictionary Commission had dwindled to one single member, the philologist Svend Grundtvig (1824-1883, elected 1868), who was less than keen on the project. It was now supplemented by two other members who had energy and patience enough to persevere until the end. One of them was Vilhelm Thomsen, and the other was the philologist Ludvig F. A. Wimmer, who is best remembered today for his monumental work *De danske Runemindesmærker* (The Danish Runic Monuments), which appeared in four volumes from 1895 to 1908; it was sponsored by the Carlsberg Foundation by no less than kr. 40,000, – the largest single grant as yet given to a single scholar. When Thomsen and Wimmer brought out the final Volume VIII in 1905, this old ghost from the past was at long last exorcised, and the Society could heave a sigh of relief, in particular when also the *Regesta* were completed two years later.

Even more interesting was what happened to the occasional publications. They had formed an irregular series of monographs, often originating in Prize Essays, and always presenting the results of current research. They began to change this character in 1876 when the Society published *Tycho Brahe's meteorologiske Dagbog* (The Meteorological Diary of Tycho Brahe) for 1582-1597, edited by the private historian and Tycho scholar F. R. Friis (1831-1910). It was of interest to meteorology as such, but more significant as a primary source of science in Denmark.

Three years later there followed a facsimile edition of a few leaves of a Medieval manuscript of Saxo's *Gesta Danorum* found at Angers in 1877 by Gaston Paris and acquired in exchange for other material by the Royal Library of Copenhagen on Madvig's initiative. Considering his interest in the history of science, it was natural that Zeuthen should support such attempts to uncover and publish such original sources.

In the year 1897 no less than two such publications came to light. One of them was Caspar Wessel's long-forgotten paper in the Writings for 1797 on the geometric representation of complex numbers, which now appeared in French translation, edited by the mathematician Herman Valentiner (1850-1913, elected 1888) and the astronomer Thorvald Nicolai Thiele (1838-1910). The other was a commentary (on John of Sacrobosco's well-known text-book on arithmetic from about 1225) written in 1291 at Bologna by a certain Petrus Philomena de Dacia, and now critically edited by the German scholar Maximilian Curtze (1837-1903). Although the Society here broke its own rules by publishing a text in Latin with an introduction in German, this was a praiseworthy deviation from the statutory sticking to Danish and French only. In fact Curtze's book became the harbinger of many later studies on Medieval science and philosophy, which have since disclosed many unknown facets of Danish intellectual life in the Middle Ages in a European context. A notable result of this work is the many volumes of the *Corpus Philosophorum Danorum Medii Aevi*, which have appeared since 1955 under the auspices of *Det Danske Sprog- og Litteraturselskab* (The Danish Society for Language and Literature), which had been founded in 1911 for the purpose of publishing Danish literary monuments.

A further effect of the new trend appeared in connection with the Tycho meeting in 1901 in the form of a handsomely produced facsimile edition of Tycho's *De Nova Stella* (1573), provided with some additional material including a preface in Latin and a very informative postscript in Danish written by Pechüle. This publication drew attention to the unique role of Tycho Brahe in the development of astronomy, underlining the need of a modern edition of his works, which were available only in old and rare printings with the exception of some collections of letters published by Friis. Without much assistance from the Society this need was met by J. L. E. Dreyer with an impressive edition in fifteen folio volumes of the *Opera Omnia Tychonis Brahe Dani*. It appeared in Copenhagen from 1913-1929 and was sponsored by both the Carlsberg and the Rask-Ørsted Foundations, while the Society for Language and Literature was in charge of the publication.

Of more domestic interest was a summary in Danish of Julius Thomsen's *Thermokemiske Undersøgelser* (1905), whereas the great folio of *Anecdota Cartographica Septentrionalia* in 1908 was of international significance. It contained a large collection of unpublished maps of Northern Europe, among them a 15th century map drawn by the previously unknown Danish cartographer Claudius Clavus Schwartz. Thus another name appeared out of the mist by which the Middle Ages had been surrounded. The work was produced by the two librarians Axel Anthon Bjørnbo (1874-1911) and Carl S. Petersen (1873-1958) who were awarded silver medals for their achievement.

An even greater impact on the history of science as a discipline was made by the publication of Ole Rømer's *Adversaria*, a copious astronomical and physical notebook by the great scientist, whose other papers and observations had perished in the great fire of 1728. It was meticulously edited by two women scholars, the mathematician Thyra Eibe (1866-1955) and the physicist Kirstine Meyer (1861-1941), and published in 1910, two hundred years after Rømer's death. In 1914 it was decided also to commemorate the centenary of the discovery of electromagnetism by a collected edition of *Ørsted's Naturvidenskabelige Skrifter* (Ørsted's Scientific Writings), a task that was entrusted to Kirstine Meyer, who finished it on time by three stately volumes appearing in 1920.

While the Society eagerly cultivated the history of the exact sciences, it did not completely forget the humanistic disciplines. After the completion of the Danish Dictionary and the *Regesta* the Dictionary Commission now took charge of another heritage from the past. The manuscript of a dictionary of the dialect of the island of Bornholm by J. C. S. Espersen (1812-1859) had lain dormant in the Archives for many years. It was now completed and published in 1908. In the following year another posthumous work was brought out, an archaeological account of *Le temple étrusco-latin d'Italie centrale* by the architect L. Fenger (1833-1905). But it must be remembered that the most important contribution to the history of science in this period was made by a classical scholar, Johan Ludvig Heiberg (1854-1928, elected 1883), who contributed to the Teubner series of classical texts with his famous, critical editions of the works of Euclid (in 8 volumes 1883-1916), Ptolemy (3 volumes 1898-1907), and Archimedes (3 volumes 1910-1915), and several other texts which have ever since been indispensable tools for all serious study of Greek mathematics.

Viewing Zeuthen's period of office in a wider perspective, one is

struck by the many important contributions to science and scholarship made without the help of the Society as such, but often initiated or promoted by its members. In this brief account we cannot consider this work in any detail, but it is not amiss to highlight a few areas in which domestic research had an international impact.

Most conspicuous was the development of the Danish school of theoretical physics. This discipline had not struck root in the country owing to Ørsted's reservations towards the mathematical description of nature which is the heart and soul of physical science. A redress of this backward situation began with Ludvig Valentin Lorenz (1829-1891, elected 1866), who was one of Ørsted's last students, but broke with the ideas of his master and went to France to be initiated in the mainstream of European physics. Working for many years at the Military High School he developed an electromagnetic theory of light that became less known, but was equivalent to that of Maxwell. He was also a gifted experimentalist, and the first scientist to receive a full salary from the Carlsberg Foundation (1886) enabling him to devote all his time to research.

Lorenz's pupil was Christian Christiansen (1843-1917, elected 1875), who succeeded Holten at the University in 1886 and immediately marked the end of Ørsted's era by publishing an excellent and very advanced textbook with the programmatic title *Indledning til den matematiske Fysik* (Introduction to Mathematical Physics, 1887). Several of his students rose to international fame, first and foremost Niels Henrik David Bohr, whose fundamental research on the structure of the hydrogen atom (1913) was based on Max Planck's quantum theory of radiation and inaugurated a new era in physics on a world-wide scale. Soon Bohr's new Institute of Theoretical Physics (1921), now called the Niels Bohr Institute, made Copenhagen a kind of Mecca for physicists from all over the world.

When this happened, a highly important contribution to astrophysics had been made by Ejnar Hertzsprung (1873-1967, elected 1919), who constructed the original version (1906) of the famous Hertzsprung-Russell diagram which became the key to the understanding of the evolution of the stars. He was also an authority on double stars. Hertzsprung made his career in Germany and later in Holland, where he was director of the astronomical observatory at Leiden, being unable to obtain a position in Denmark, where the chair of astronomy was occupied from 1907 to 1940 by Svante Elis Strömberg (1870-1947, elected 1927), who worked on celestial mechanics along traditional lines.

Educated by Christiansen was also Peder Oluf Pedersen (1874-1942,

elected 1917), whose research on the propagation of radio waves helped to explain the success of the arc-transmitter invented by Valdemar Poulsen (1869-1942, elected 1914) in 1903 and soon after used all over the world as vastly superior to the Marconi system of wireless telegraphy. Other scientific landmarks were made in chemistry by Niels Janniksen Bjerrum (1879-1958, elected 1916), who applied quantum theory to molecular spectroscopy (1912), and by Kjeldahl's successor at the Carlsberg Laboratory Søren Peter Lauritz Sørensen (1868-1939, elected 1906), who was one of the pioneers of protein chemistry and became universally known for his electrical method of measuring the hydrogen-ion concentration (pH value) in solutions (1909).

In the life sciences we notice a long succession of oceanographic expeditions to the North Atlantic with the vessels "Ingolf" 1895-1896, and "Thor" 1903 ff., the latter exploring also the Mediterranean 1908-1910, while the schooner "Margrethe" made investigations in West Indian waters. Very many scientists took part in this research, the central figure being the ichthyologist Johannes Schmith (1877-1933, elected 1918), who was professor at the Carlsberg Laboratory and known for his stubborn attempts to clear up the strange wanderings of the eel from the Sargasso Sea to the streams and rivers of Northern Europe and America; they were crowned by success on his somewhat later expedition with the steamer "Dana" in 1920-1922.

In the laboratories at home we find among others Niels Bohr's father, the physiologist Christian Bohr (1855-1911, elected 1888), who discovered the "Bohr effect" of CO_2 on the binding of oxygen by the haemoglobin of the blood. Among his pupils was Schack August Krogh (1874-1949, elected 1916), who in 1910 announced the discovery that the absorption of oxygen and the elimination of CO_2 by the lungs were diffusion processes. For this he was awarded the second of the Nobel Prizes given to Danish scientists (1920), the first having been given in 1903 to Niels Ryberg Finsen (1860-1904) for his treatment of the skin disease *lupus vulgaris* by electric arc light.

In genetics Wilhelm Ludwig Johannsen (1857-1927, elected 1898) introduced new basic concepts and rigorous statistical methods in the study of heredity. His book *Arvelighedslærens Elementer* (The Elements of Heredity) from 1905 was translated into German in 1909 and became the most influential European text-book on the subject. Soon after the botanist Peter Boysen Jensen (1883-1959, elected 1929) broke new ground by proving the existence of growth hormones in plants (1911).

While the exact sciences flourished owing to a large extent to a break

with the prevailing tradition, the humanities were able to progress in more continuity with the past. This was particularly evident in the philological disciplines where the tradition from Rasmus Rask made the last quarter of the 19th century one of the most fertile periods in the history of philology in Denmark as a whole. As we have seen it was Rask's merit to stress the importance of phonetic considerations in the comparative study of languages. This had enabled him to establish the essential features of what his contemporary Jacob Grimm (1785-1863) called the Germanic Sound shift, leaving a number of apparent exceptions to this law unexplained. They were now completely clarified by Karl Adolf Verner, in a paper called *Eine ausnahme der ersten lautverschiebung*, published in Germany in 1876 and containing what is now known as Verner's Law.

About the same time Ludvig Wimmer published his pioneering work on *Runernes Oprindelse i Norden* (The Origin of the Nordic Runes, 1874), and a few years later Vilhelm Thomsen used philological methods to describe *The Relations between Ancient Russia and Scandinavia and the Origin of the Russian State* (1877) in a course of lectures given at Oxford in 1876 and causing much excitement in historical circles. Another exceptional feat was Thomsen's decipherment of the inscriptions found in 1880 near the river Orkhon in Mongolia; they proved to be in a previously unknown, early form of Turkish, as Thomsen demonstrated at a meeting of the Society 1893 December 15 and described in his *Inscriptions de l'Orkhon* (1896) which inaugurated a new era in Turkish studies.

The study of modern European languages also profited from the impetus of the Danish School. A notable achievement was the great *Grammaire historique de la langue française* I-VI (1899-1930) by Kristoffer Nyrop (1858-1931, elected 1899), who heroically succeeded in finishing it despite his increasing and finally total blindness. Even more influential from an international point of view was the work of Otto Jespersen (1860-1943, elected 1899). Already as a small boy he had read Rasmus Rask, whose influence was behind Jespersen's reform of the teaching of modern languages, and also behind his great *Fonetik* (1897-1899). The latter was followed by a wealth of other works, including the delightful little classic called *Growth and Structure of the English Language* (1905), and the monumental *Modern English Grammar* I-VII (1909-1949), which has retained its position as a standard work on this subject.

A number of other philologists also made an impact on the international scene. Among them was Holger Pedersen (1867-1953 elected



The so-called "Class Room" for meetings of one or another of the two classes of the Society (before the restoration in 1976). On the table are the two candelabra donated by Julius Thomsen in 1892. On the back wall are portraits of the Presidents Hauch (left) and Schimmelmann (right).

1905), who in 1914 succeeded Vilhelm Thomsen as professor of comparative philology. As a young man he had made his name with a study of Albanian (1895), and later he became famous for his *Vergleichende Grammatik der keltischen Sprachen I-II* (1909-1913). His *Sprogvidenskaben i det nittende Aarhundrede* (The Science of Language in the Nineteenth Century) is still read as an elegant and instructive survey of this whole field. Another pupil of Vilhelm Thomsen was Vilhelm Grønbech (1873-1948, elected 1918), who moved from Turkish philology into the history of religions. Semitic philology was cultivated by the theologian Frantz

Buhl (1850-1932, elected 1900), who renewed Old Testament studies in Denmark before he turned to the world of Islam with his *Muhammeds Liv* (The Life of Muhammed, 1903) and many later works. Active in this field was also Johannes Østrup (1867-1938) with his studies of the *Arabian Nights* (1891) and a later translation of this famous collection of Arabic tales into Danish. More distant areas were not forgotten. The tradition from Rask and Westergaard was continued by both the Iranologist Arthur Christensen (1875-1945, elected 1918), and the Indologist Dines Andersen (1861-1940, elected 1908), whose *Pāli Reader* (1901-1907) appeared in several editions as an indispensable tool for Indian studies all over the world. As a new subject Egyptology was introduced by the Director of the Royal Library Hans Ostenfeld Lange (1863-1943, elected 1906), while William Thalbitzer (1873-1958, elected 1923) became the principal authority on Eskimo language and culture. A highly gifted representative of the Danish philological tradition was the Germanist Louis Leonor Hammerich (1892-1975, elected 1936), who edited the publications of the Society from 1941 to 1969. His original contributions to the study of languages as widely different as German and Eskimo show the versatility of his mind, just as his studies of Medieval literary and spiritual texts combined a high degree of scholarly precision with a penetrating understanding of intellectual movements of the past. His contemporary was Holger Pedersen's successor Louis Hjelmslev (1899-1965, elected 1946, a son of the mathematician J. Hjelmslev), who broke away with the purely historical approach in favour of a structuralistic, synchronic method of describing "language itself". In 1943 he summarised his principles in the programmatic essay *Omkring sprogteoriens grundlæggelse* (Around the foundation of the theory of language), which is one of the rare works that have caused scholars to learn Danish in order to be able to read it, and which for many years made Copenhagen an important centre for the new linguistics.

Besides comparative philology archaeology too had established itself as a particularly "Danish" discipline since C. J. Thomsen had introduced the concept of the Three Ages. An important event in this field was the inauguration of the National Museum of archaeology and ethnography in 1892. Its first director was Sophus Müller (1846-1934, elected 1898), who developed the museum into an independent centre of research. His work *Vor Oldtid* (Our Ancient Ages) from 1897 was an excellent handbook of archaeology and cultural history and (in German translation) the basis of the European renown of its author. Modern techniques of excavation were developed by his assistant Christian Blinkenberg (1863-

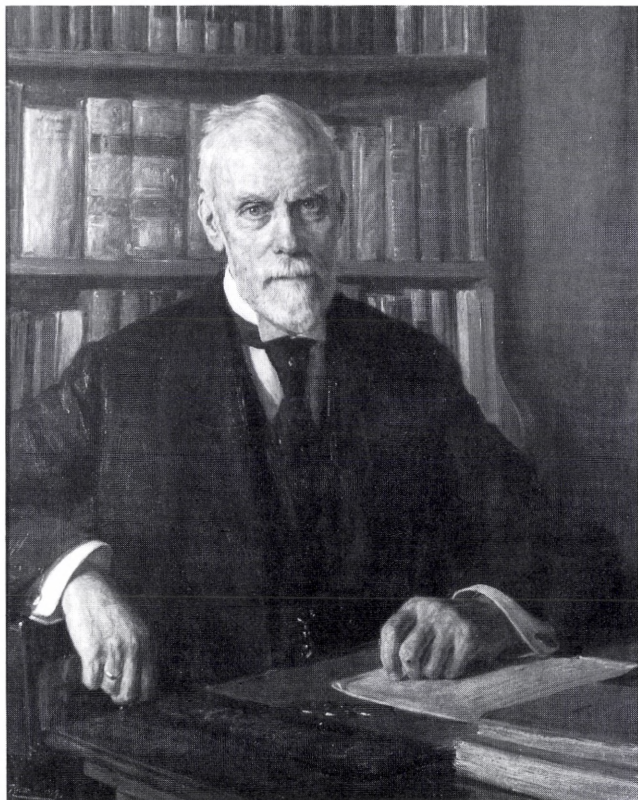
1948, elected 1913), who also greatly extended the scope of Danish archaeology by directing a long series of excavations at Rhodes, sponsored by the Carlsberg foundation from 1902 onwards, with Karl Frederik Kinch (1853-1921, elected 1913) as his collaborator. In 1926 Blinkenberg resigned his chair at the University to become a Carlsberg Professor devoting all his time to studying the material from Rhodes. Owing to his achievement the old tradition of Nordic archaeology was now supplemented by sustained work in the classical area that was later extended by several fruitful excavations in Syria, Palestine, and the Persian Gulf.

While philology and archaeology loomed large in the international arena, the domestic scene was marked by a new departure in history, connected with the name of Kristian Erslev (1852-1930, elected 1882), who in 1883 succeeded the brilliant, but rather traditional Caspar Paludan-Müller (1805-1882, elected 1843) as professor of history. All later Danish historians became indebted to Erslev for his source-critical principles, which no doubt put historical research on a more solid foundation, but also turned it to some extent into a positivistic direction, almost as if history was nothing more than a precise record of the past, coolly described without personal engagement or passion, – a tendency that was in obvious opposition both to traditional views and to the conception of his contemporary colleague at the University, Japetus Steenstrup's son Johannes Steenstrup, who was professor of history from 1882 to 1917. This was the origin of a latent tension in the historical community, which sometimes came to the surface in dramatic ways. In the life of the Society Erslev played an important role, in particular during his period as chairman of the Carlsberg Foundation (1913-1926), which profited from his considerable administrative and financial talent.

CHAPTER XVII

Openings towards the World

Having settled down on its new and comfortable premises and consolidated its superior position in the Danish academic world with the backing of the Carlsberg Foundation, the Society entered a period in which its foreign relations assumed a new importance. This happened around the time of the First World War, in which Denmark succeeded in preserving its neutrality despite its precarious geographical position at the entrance to the Baltic Sea. In the political field this neutrality made it possible for Denmark to become one of the founding members of the League of Nations together with the victorious Allied Powers in the same year (1919) in which the peace conference at Versailles offered a new solution of the Schleswig problem which had embittered relations with Germany for such a long time. Now a referendum in February 1920 disclosed a relatively well-defined linguistic border between Danish and German, running across the province just north of the city of Flensburg. Here a new frontier was established, the southern part of the Duchy being ceded to Germany, while the northern part was incorporated into the Kingdom of Denmark. Despite the existence of considerable minorities on each side, this frontier also survived World War II and is no longer disputed. But Danish neutrality also had notable consequences for the Society, which deliberately assumed a mediating role after the war in the general efforts to restore the international collaboration in science and scholarship which had not only been interrupted by the hostilities, but had also become infested with ideological prejudice, not least on the part of the British and French academies, which wished to exclude their German counterparts from the international academic community, among other things because of the notorious declaration by 93 German scientists in which all allegations of German atrocities in Belgium were summarily dismissed. In the efforts to overcome this stalemate the Society came to play a role which put it on the academic map of Europe in a previously unknown manner. In this chapter we shall consider some of the aspects of this development in connection with a brief review of what happened in the internal life of the Society.



Vilhelm Thomsen (1842-1927). Twelfth President of the Society (1909-1927). – Painting by Knud Larsen 1920 (in the possession of the Society).

Here not least the position of the President became a matter of debate. When Julius Thomsen died 1909 February 13, Vilhelm Thomsen was unanimously elected the 12th President of the Society [Lomh. I, 480]. He was now at the height of his fame both at home and abroad, and his 70th birthday 1912 January 26 was solemnly celebrated at a special meeting attended by the King, who on the day before had presented Thomsen with the Order of the Elephant, the highest decoration of the country, usually reserved for Royalty and heads of state, and previously bestowed only upon such members as A.S. Ørsted and J.N. Madvig. However, Thomsen was not as active as President as his immediate predecessors had been, being constantly worried by ill health and often absent from the meetings. But when in 1925 he asked to be relieved

from his office, the Society told him (in a letter on which a unanimous vote had been taken) that

the importance of the President does not so much reside in the performance of this or that task as in the esteem in which he is held as a scholar, and which endows him with the authority to represent Danish science and scholarship both at home and abroad (...). Compared with this it is of minor importance for the Society that considerations of health have frequently prevented you from presiding over the meetings [Lomh. I, 485]

This vote of confidence persuaded Thomsen to persevere until he died 1927 May 12. Yet it had underlined the fact that it was indeed inconvenient to have an old and ailing President, and in 1925 a group of members proposed a change of the Statutes which would prevent the President from being re-elected after his first five years of office, and also safeguard the tradition that the Presidents were to be chosen from each of the two classes in turn.

The proposal did not obtain the necessary majority of two thirds of the votes and was accordingly rejected, but it was revived by Thomsen's successor, the mathematician and geodesist Niels Erik Nørlund (1885-1981, elected 1916). It was again rejected; but Nørlund followed his convictions by refusing to be re-elected in 1933. In his place the classical scholar and editor of Kierkegaard's works, Anders Bjørn Drachmann (1860-1935, elected 1903) became the 14th President in May 1933, resigning his post as chairman of the Carlsberg Foundation in order to keep these two functions separate. He, too, was in poor health and resigned already in September 1934, dying in the following year. He was succeeded by the philologist Holger Pedersen, who announced that he considered himself to be only a substitute for Drachmann and would resign five years after the latter had been elected, which he actually did in 1938. His successor was another renowned member of advanced age, the Carlsberg chemist S.P.L. Sørensen, who had been chairman of the mathematical-physical class since 1913. He was unanimously elected in March 1938, but died already in the following February after the shortest period of office in the whole history of the Society.

From this rapid succession of three aged Presidents in six years two lessons could be learned, firstly, that the unwritten convention of letting the candidate alternate between the two classes had no binding force and, secondly, that the stability of the Society suffered by the continuous elections of elderly Presidents, however famous they might be. Fortunately there was no doubt of who the 17th President ought to be. At a

meeting 1939 March 31 the physicist and Nobel Laureate Niels Bohr was unanimously elected at the unusually young age of 53, and with the telling argument that "a special motivation for this proposal is unnecessary" [Lomh. I, 496]. This inaugurated a new period of stability of the Presidency with Niels Bohr in the chair until his death in 1962.

The office of Secretary suffered much fewer tribulations. In April 1917 Zeuthen announced that the time had come for him to abandon the ship he had steered so competently for almost forty years, but that he was prepared to stay on until October in order to assist his successor, who was elected 1917 May 11. Like all his predecessors since Abildgaard and Bugge, Martin Hans Christian Knudsen (1871-1949, elected 1909) was a scientist, more precisely an experimental physicist, trained by C. Christiansen, and highly active in two different fields. As a young man he had taken part in the "Ingolf" expedition in 1895-1896 and had here acquired a life-long interest in hydrography. Around the turn of the century this discipline underwent a strong development, to which Knudsen contributed new measuring instruments of his own invention and later sold all over the world from his workshop at the Technical University. His other field of interest was the kinetic theory of gases to which he made both theoretical and experimental contributions, in particular by his investigation of the behaviour of gases under extremely low pressure. This subject was not only of scientific interest, but also important for the technical application of vacuum physics on which modern industry increasingly depends.

Like many new Secretaries before him Knudsen found it expedient to begin his work by updating the Statutes of the Society. The revised version of 1919 differed from previous editions by separating the Statutes from the Rules of Procedure, the former containing the fundamental principles of the Society, while the latter comprised the more ephemeral regulations that could be more easily adjusted from time to time, such as the rules of elections, precepts for the meetings, and stipulations concerning the publications. One new feature of the Statutes deserves particular mention. Since its very beginning the Society had admitted "such men as may be expected to work for its purpose". Now the word "men" was replaced by "researchers" with the implication that women might also be members. This attempt at a renewal resulted in the election in the following year of Madame Marie Curie (1867-1934) as a foreign member, but was not followed up until many years later. In fact the next woman member was the English botanist Irene Manton (1904-1988), who was admitted in 1953.

Other revisions of the Statutes were published in 1929 and 1938 without any change of the essential rules; the repeated proposals for preventing the Presidents from being re-elected were constantly resisted by a majority who wished to preserve the traditional freedom in this respect. The number of domestic members also remained open, but with no particular effect. During the 23 years from 1917 to 1939 there was a total of 57 new elections, resulting in a total membership of 67 in 1939. The academic life of the country obtained a broader base in 1928 with the founding of a new university at Aarhus (inaugurated 1933). However, this seems to have been ignored for a considerable period, the first Aarhus members of the Society being the Slavonic scholar Adolf Stender-Petersen (1893-1963, elected 1943), and his colleague the Romance philologist Andreas Peter Damsgaard Blinkenberg (1893-1982, elected 1944).

The initiative of the new Secretary was also felt in the daily routine of the Society and in particular in the modernisation of the office and the development of the clerical staff. It was he who first provided the office with a typewriter, an innovation that made it possible to abandon the boring work of copying letters into special Copy Books. He also broke with Zeuthen's habit of keeping the Minute Book himself, leaving this task to one of the clerical staff. The latter comprised the old messenger P.C. Andersen, who was promoted to "assistant", having learned to type, while the part-time assistant A.Høyer (who had a university degree) became "amanuensis". He was replaced in 1921 by a full-time assistant, P.E. Olesen, who from 1922 had a former schoolteacher J.P.J. Schmidt as a help with the growing work of mailing publications to other countries. When in 1926 Olesen was appointed personal assistant to the Editor Dines Andersen, he was replaced by Asger Lomholt (1901-1990), who was destined to play an exceptional role in the life of the Society over half a century.

Already as a student of theology Lomholt had been engaged by Martin Knudsen as tutor of his asthmatic son, and to help out in the office of the Society. Having obtained his degree in 1926 he entered upon his life-long and singularly dedicated work of bringing the clerical business of the Society up to modern standards. He edited the Records and kept the minutes, reorganised the Archives in an exemplary way, facilitated their use by creating a huge card index of all persons and events connected with the Society over the ages, and published a bibliography of all its publications from 1742 to 1930. But the great monument to his industry and devotion was his five quarto volumes of *Sam-*

Asger Lomholt (1901-1990).
Archivist (1925-1971)
and historian of the Society.



linger til Selskabets Historie 1742-1942 (Collections Illustrating the History of the Society), of which Volume I appeared on the occasion of the second centenary of the Society in 1942, while the others followed in 1950, 1960, 1961 and 1973. On more than 2,300 densely printed pages practically all the material concerning the Society over two hundred years was systematically arranged, carefully described, and illustrated by copious extracts from both manuscript and printed sources. The presentation is dry and matter-of-fact and almost free of personal opinions or comments. On the one hand, Lomholt's natural shyness and scholarly modesty prevented him from assuming the proper role of a historian; on the other there is no doubt that he always regarded the Society as an august institution, – to be almost audibly pronounced with a capital S – which was above all comments from one of its employees. Nevertheless, in 1962 he ventured to tell the story in his own words in the charming book *Lærdomsmosaik* (Mosaic of Learning), a little labour of love, whose title indicates that he after all distinguished a kind of pattern of all the details he had so meticulously recorded.

Lomholt retired as head of the office in 1971, but did not rest on his laurels. Keeping his desk at the Society, he continued his Collections with the result that more than 2,500 typewritten pages covering the period 1942 to 1975 were placed in the reading room, where they still await publication. It goes without saying that he was also a steadfast guest at the meetings until his very last years, when the natural weakness

of old age and his increasing deafness finally forced him to abandon his discreet, but well-deserved position as a kind of Grey Eminence of a Society whose history in a difficult period might have been different if he had not kept a watchful eye on its traditions.

During Zeuthen's period as Secretary it became more and more clear that the Society was not adequately represented in the world at large by its publications. The French summaries in the Records were too brief, and the exclusive use of Danish in the Writings limited their readership to the Scandinavian countries. To remedy the situation the physicist C. Christiansen proposed in 1901 that English should be allowed in both publications; and in the next year the Statutes were so amended that the Writings were allowed to publish papers in Danish, Norwegian, Swedish, English, French, German and Latin. Otherwise there were no changes, either of the quarto format or the arrangement of the Writings in successive series of up to twelve volumes each. These features were in many ways inconvenient, and in January 1917 the whole question was reviewed by a special commission with H. O. Lange as the central member. Later the same year the Society approved its proposals of supplementing the Writings by several new series of *Meddelelser* (i.e. Communications). Here the format was to be ordinary large octavo, and the individual papers were to appear as separate (and separately sold) fascicles with their own pagination; this made faster publication possible and did away with the need for offprints. The fascicles were to be collected into volumes which did not appear in successive series, but were numbered continuously. Finally the new Communications were to appear in several parallel sets according to a number of principal disciplines, giving rise to the following five series of Communications:

- | | |
|-----------------------------------|---------------------------------|
| (1) Mathematical-Physical | in 41 volumes from 1917 to 1990 |
| (2) Biological | in 24 volumes from 1917 to 1971 |
| (3) Historical-Philological | in 35 volumes from 1917 to 1956 |
| (4) Philosophical | in 2 volumes from 1920 to 1956 |
| (5) Archaeological-Art historical | in 4 volumes from 1932 to 1959 |

In 1957 the three latter series were united into a series of Historical-Philosophical Communications of which volumes have appeared until 1992, and in 1967 the Biological Communications were suspended in favour of the Biological Writings. However, this long overdue reform did not mean that the Writings were abandoned. They were even supplemented by a third, biological series in 1941; but they now served mainly

as a supplement to the Communications in cases where their larger format was essential for the sake of illustrations.

The establishing of the Communications not only created a new and up-to-date outlet for the current works of both the members of the Society and other scholars and scientists. It also accelerated the exchange business of the Society, which continued to be on the increase, recovering quickly after a temporary setback during the First World War. In 1929 the publications of the Society were sent to about 340 foreign academies and other institutions [Lomh. II, 178], and the Society received about 725 similar publications in return. However, foreign university libraries were usually not included in the exchange system since in general they had no publications of their own to offer. This awkward situation was discussed in 1930 by a special Exchange Commission with the result that the publications were offered free of charge to 119 such libraries, of which 66 responded in a positive way. The effect was that by 1937 no less than 450 foreign institutions were on the list of exchanges. In return the Society received about 1,050 titles, comprising a total of about 6,500 items.

According to the old tradition the books and journals received were offered as gifts to the major libraries of the country after a short period of time in which the members could inspect them at the Society. Originally everything went to the University Library, but from 1910 the humanistic material was placed in the Royal Library. Later the new State and University Library of Aarhus was also included in this arrangement.

This generous practice had financial repercussions on the Society, which had to pay for the printing and mailing of the publications it gave away for nothing in order to provide the libraries with a large and valuable acquisition of periodicals. In consequence the annual budget of the Society began to show a deficit owing to the rising cost of printing in the years of the war. In 1918 the Carlsberg Foundation came to the rescue with an extraordinary grant of kr. 100,000, but in the same year the Society also reminded the Government that

The Royal Danish Society receives only kr. 1,500 from the State, which is many times less than what similar societies in other countries receive, and actually only a fraction of the compensation which the State ought to provide in return for the large gifts of books which the Society offers every year to the public libraries [Lomh. II, 208].

This appeal had the desired effect. The Society received a grant of

kr. 70,500 as an immediate relief, and had its annual subvention raised to twice the former amount.

Another public service was also rendered by the Society. Denmark had never ratified the Brussels Convention of 1886 about the exchange of official documents and general literature, and no Danish Bureau of exchange had been established. Instead the Society was asked to take charge of the matter. This involved an increasing amount of work with two annual shipment of material to several countries, a figure which rose to four after the war and to twelve in 1935.

The involvement of the Society in more concrete forms of international collaboration began long before the war. Already in 1895 it had joined a project launched by the Royal Society of London for the purpose of publishing an International Catalogue of Scientific Literature, and had established a Danish Bureau of Registration, sponsored by the Carlsberg Foundation and with the young Martin Knudsen as an energetic secretary. This work continued until 1916, when it was decided to adjourn it until peace had been restored. After the war the Society wished to resume it; but this proved to be impossible because Germany could no longer participate, and the project was finally shelved at a conference in Brussels in 1922 [Lomh. II, 248 ff].

While the International Catalogue was an international enterprise of a limited scope and planned and directed by a single scientific society, the Association Internationale des Académies was created in the year 1900 as a kind of umbrella organisation of about twenty learned societies in various countries in order

to prepare and to promote scientific and scholarly undertakings of general interest, on the proposal of any of the associated academies, and to take joint measures to facilitate scientific and scholarly relations [Lomh. II, 197].

It was joined from the very beginning by the Society, which sent one delegate from each of its two classes to the general assemblies, at which several new projects were discussed. Among them was a proposal made by J. L. Heiberg and his colleague Herman Diels in Berlin, who urged the Association to prepare a *Corpus Medicorum Graecorum* comprising critical editions of all ancient Greek medical writings. At a meeting in Vienna in 1907 this task was entrusted to the Copenhagen, Berlin, and Leipzig Societies, which planned a series of no less than 32 volumes to be published by G. B. Teubner in Leipzig over a period of sixteen years. This project, too, suffered greatly from the war, which completely destroyed the Association Internationale. However, the Danish contribu-

tions were well under way, supported by both the Society and the Government, and after the war J.L. Heiberg crowned his life-long dedication to the ancient sources of science by publishing the works of Paulus of Aegina in two volumes (1921-1924). They were followed in 1923 by a half-volume of Aretaeus prepared by Karl Hude (1860-1936, elected 1903), and by the works of Oribasius published in five volumes (1926-1933) by Hans Ræder (1869-1959, elected 1928).

Already during the war it was evident that something had to be done to preserve or restore as much academic collaboration as possible after the cessation of the hostilities. In October 1917 the Danish Foreign Minister P. Munch asked the Ministry of Education to create a special committee for "preparing the collaboration between scholars and scientists after the war" [Lomh. II, 206]. Here the Society came to play a prominent role owing to the President Vilhelm Thomsen and not least the new Secretary Martin Knudsen, who was now well acquainted with international cooperation from his work in hydrography and oceanography. They proposed that Denmark might contribute to the recovery by creating two institutes of advanced studies which should be open to people from all countries regardless of the role they had played in the war. One of these institutes was to be named after H.C. Ørsted and dedicated to science. The other was to be a Rask-Madvig institute for the study of the humanities [Lomh. II, 207-211]. A more specialised institute of oceanography was also included in the proposal, no doubt because of Martin Knudsen's own scientific proclivities. But while an oceanographic institute at long last materialized in 1963, there was insufficient support for the two main institutes.

Instead the Government chose to establish a new Rask-Ørsted Foundation which was formally created by an Act of Parliament 1919 October 4. It was provided with a basic capital of kr. 5,000,000, and governed by a board of 21 members, two of whom were to be appointed by the Society, whose first representatives were O. Jespersen and N. Bjerum. The purpose of the foundation was to promote all kinds of academic collaboration between Denmark and other countries, among other things by travel grants to both Danish scholars and scientists and foreign visitors; it also supported translations of works in Danish into a major language. This relieved the Carlsberg Foundation of a part of its burden, and the two foundations soon began to work closely together.

In the meantime new instruments of institutional collaboration had emerged on the international scene. At the beginning they met with serious difficulties due to the hostile bitterness which had poisoned also

the academic atmosphere to an extent that was unknown after any previous war. In particular both scholars and scientists of the Central Powers were regarded by the Allies as hopelessly compromised. This attitude dominated a series of talks in October and November 1918 between representatives of the Royal Society of London and the Académie des Sciences in Paris. Here it was proposed to dissolve almost all the existing international organisations for science in order to re-constitute them without German participation. A similar initiative was taken with respect to the humanistic disciplines by the French Académie des Inscriptions et Belles-Lettres.

As a result of these preliminaries two new international academic organisations were created in 1919. Scientists from the Allied Powers founded the Conseil International des Recherches Scientifiques with its headquarters in Brussels. Here the Germans were strictly excluded. A little more tolerant was the humanistic Union Académique Internationale, which allowed societies of any country to apply for membership, demanding a majority of three quarters for being admitted. The site of its central office was for many years a bone of contention, but most of its general assemblies were also held in Brussels.

While the Society was among the founding members of the Union, represented at its first meeting in Paris 1919 October 15-18 by O. Jespersen and J.L. Heiberg, it was much more reluctant to join the Conseil. Already in March 1919 the Society had set up a Commission for International Scientific Cooperation, which had discussed the matter with several scientific associations in Denmark, and also made contact with academies in other neutral countries, such as Switzerland, Norway and Sweden. In general there was a strong feeling that it was wrong to continue the war in the academic field by excluding German scientists. On the other hand, it was thought unwise not to support the only scientific organisation that had any chance of surviving. After many deliberations the Society finally decided to apply for membership of the Conseil (1920 March 26), but with the significant proviso that neutral countries were to be at liberty both to resume old and to establish new scientific connections with all countries, i.e. also those that had lost the war.

Apart from joining the new international organisations the Society also took an initiative of its own in order to repair some of the damage caused by the war [Lomh. II, 186f.]. In December 1920 a special Commission for Sending Scientific Literature to Foreign Libraries was set up with H. O. Lange as chairman, and in the following years about 120,000

copies of books and periodicals were shipped to sixteen national or university libraries on the Continent before this operation was wound up in 1927. A similar gift of Danish books was also sent to the university library in Tokyo, which had been destroyed in an earthquake in 1923.

In both the Union and the Conseil the central authority resided in a General Assembly which met annually in the former and at three-year intervals in the latter case. In both associations this Assembly was constituted by national delegations representing the individual member countries and appointed by a national academy. This rule made the Society responsible for the Danish participation in both organisations, and several of its members devoted much of their time to this task. Thus Martin Knudsen was a constant member of the Danish delegation to the Conseil, being often accompanied by W. Johanssen and N. Bjerrum, and later by N.E. Nørlund, who served as president of the Conseil from 1934 to 1937. His invitation to have the General Assembly of 1940 in Copenhagen was accepted, but nothing came of it owing to the outbreak of the Second World War. In the Union a very prominent role was played by J.L. Heiberg from its foundation in 1919 until his death in 1928. He was usually supported by O. Jespersen or C. Blinkenberg. From 1929 to 1935 his role was taken over by A.B. Drachmann, at whose invitation the General Assembly of 1935 was held on the premises of the Society in Copenhagen, an event of some significance, as we shall see below. In the last years of the period between the wars the Society was usually represented by the Iranologist Arthur Christensen (1875-1945, elected 1918), the Romance scholar Jens Kristian Sandfeld (1873-1942, elected 1914), and the Byzantinist Carsten Høeg (1896-1961, elected 1941) as deputy member.

Representing a neutral country with excellent academic relations to most other countries, the Society became particularly involved in the efforts to integrate the Central European countries into the new international organisations. Several other countries worked along similar lines, and after a few years this thorny question became of overriding importance for the very existence of both the Conseil and the Union. In 1925 Switzerland and Holland came up with an official proposal to lift the ban on Germany and her former allies. This was at once supported by the Society, which refused, on the other hand, to back a Norwegian threat of leaving the Conseil if the restrictions were not abandoned. The major antagonists were France and Belgium, which would make an invitation to these countries dependent upon their joining the League of Nations. The question was adjourned to an extraordinary General As-

sembly in 1926, which finally adopted a proposal made by the British physicist and Nobel Laureate Lord Rutherford to invite both Germany, Austria, Hungary, and Bulgaria. However, two years later no reply had been received from the German academies, which were not too keen on joining the Conseil, having already created a separate association of their own. Eventually both Germany and Austria became members of the Conseil, but without taking any part in its activities.

The same problem gave rise to even greater difficulties in the Union despite its essentially more liberal and non-exclusive statutes. This was felt by the Society, which in 1922 created a permanent Commission for the Union Académique Internationale without having a similar commission for the Conseil. In 1924 it discussed a Norwegian proposal for admitting Germany to membership. This was contrary to J. L. Heiberg's opinion, and the Danish delegation was instructed to vote against it. In 1926 the proposal from Norway came up again at a General Assembly which was chaired by Heiberg as vice-president of the Union, and in the following year it was also strongly supported by the United States of America. Now Denmark voted in favour of the proposal, which was nevertheless withdrawn again since informal talks with the German association of academies had revealed that Germany made unacceptable conditions for joining the Union. The result was that the problem of German participation became disastrously entangled with the question of where the General Assemblies should be held. According to the statutes they were to take place in Brussels, a place where the Germans justly felt that they would be particularly unwelcome. Moreover, they also demanded that the Union should change its statutes, so that the German academies as such were to be admitted, but not only their humanistic sections. When this matter came up again in 1929, the famous German classical scholar U. von Wilamowitz-Moellendorff (1848-1931) explained this strangely unrealistic attitude by stating that

The Council of Research, – which our academies have never joined – is going to die of itself in a couple of years. It has never achieved anything. In consequence the Union must comprise the natural sciences; then everything will be in order [Lomh. II, 258].

Of this there could be no question. The Conseil had already overcome its own crisis although Germany continued to ignore it. Moreover, both France and Belgium strongly objected to moving away from Brussels, one of the arguments being that this would increase the travel expenses of the French delegations.

A new attempt to escape from this impasse was made in 1931 by the

Danish, British and Italian delegations, which proposed to amend the statutes, so that General Assemblies could be held in other countries than Belgium. An American proposal for a compromise according to which the Assemblies were "normally" to be held in Brussels won more support, and both Denmark and Norway announced that they would leave the Union if it were not adopted. In the following years A. B. Drachmann displayed much diplomatic ingenuity on visits to Germany, Belgium and England, and in 1934 the German academies finally informed him that they would accept an invitation, but not apply for it as prescribed in the statutes.

In this situation it was a personal success for Drachmann that he persuaded the Union to meet in Copenhagen in 1935 as a demonstration that the Belgian monopoly was now abandoned. Here three other member countries moved that Germany and Austria should be formally invited with the result that the two countries were present at the next meeting in 1936, – in Brussels.

This protracted affair revealed how difficult it was to heal the wounds of a war in which the academic community had been infected with prejudice and animosity no less than the populations in general. In concert with other academies the Society had worked hard to cleanse the atmosphere, and in the end good will and common sense had prevailed. Without doubt the Society had here played a greater role than the small stature of Denmark would normally have allowed; but it is natural to assume that this result was achieved to a great extent because of the resolute stand taken by Norway and supported by other small countries like Switzerland and Holland.

CHAPTER XVIII

Research in an International Framework

The new international connections described in the previous chapter had a considerable impact on the life of the Society in the years between the two World Wars, creating both new opportunities for research in the scientific as well as in the humanistic disciplines, and a new understanding of research as a common enterprise transcending all political frontiers. But the impact was felt in very different ways in the two principal areas of knowledge owing to, or perhaps only reflected by the different policies adopted by the Conseil and the Union respectively.

According to its statutes the aim of the Conseil was to create and support an international union for each separate branch of natural science, or to revive such unions as had been obliterated or badly damaged by the first World War. The infrastructure of the organisation was to be established on a national basis with a national committee for a specific discipline as the fundamental unit. In practice this system could be established in various ways.

As an example we may consider the case of chemistry. Here a number of individual chemical societies in various countries had created the first Association Internationale des Sociétés Chimiques in 1907. It did not survive the war, and with the assistance of the Conseil a new Union Internationale de la Chimie Pure et Appliquée was set up in 1919 with allied and neutral states as members. Danish participation was made possible in 1920, when a number of chemical societies in Denmark united in a Joint Council of Danish Chemical Societies for International Cooperation, which was approved by the Conseil as its official link with the Danish chemists.

A similar course was followed in several other disciplines. Thus in 1921 the mathematicians informed the Society that they had formed a national committee of their own in order to join the Union Internationale des Mathématiciens, while the participation of the geographers in the Union Géographique Internationale was established by the Royal Geographical Society of Copenhagen, although not until 1938.

In such cases the national scientific milieus had been sufficiently strong and alert to make international connections without support from the outside, and the Society was not called upon to act as an intermediary. Astronomy presented a different case. It was a "small" discipline with only a few professional members and no national organisation, but much international experience owing to the old *Astronomische Gesellschaft* from 1866, and also to the International Bureau of Astronomical Telegrams, whose branch at Kiel was moved to Copenhagen in 1914 because of the war. In 1919 the Conseil took steps to create a new Union Astronomique Internationale, and Denmark was invited to join it. E. Strömngren argued that this was a matter for the Society, which established the national committee for astronomy in 1924. It consisted of Strömngren as chairman and Dreyer, Hertzsprung and Nørlund as ordinary members. They were all members of the Society, in which the idea that national committees might also include scientists outside its own circle did not emerge until later. A consequence of this new integration was the official transfer of the Bureau Central des Télégrammes Astronomiques to Copenhagen in 1922.

More difficult was the question of adhering to the new Union Géodésique et Géophysique Internationale which was formed by the Conseil in 1919. The director of the Danish Geodetic Survey was strongly opposed to joining a union from which Germany was excluded, and it was not until N. E. Nørlund succeeded him in 1924 that this policy was reversed. In this case, too, it was the Society that established the necessary national committee. The adherence to the new Union Internationale de Physique pure et appliquée created by the Conseil in 1922 went more smoothly owing to the influence of Martin Knudsen, who was one of its founding fathers. Nevertheless, it was only by eleven votes against nine that the Society decided to join this body and to set up a national committee with Knudsen as chairman. Later Niels Bohr served as president of this Union Internationale from 1934 to 1937.

A similar role was played by the Society in 1930 when Denmark joined the Union Radio-Scientifique Internationale which had been created in 1919 as a continuation of an earlier international association dating from 1913. In this field the two wireless pioneers, Valdemar Poulsen and P. O. Pedersen, played a prominent role, in particular at the general assembly of the Union held in Copenhagen in 1931. Finally, in 1938 the Society established a national committee for the international Committee on Science and its Social Relations which had been formed in the previous year on a Dutch proposal. The chairman was the phys-

ical chemist Johannes Nicolaus Brønsted (1879-1947, elected 1914); but because of the Second World War this initiative remained a lonely seed that was unable to strike root until many years later.

There is no doubt that the introduction of national committees as the basis components of the Conseil had a stimulating influence. Such committees made it easier for scientists belonging to a specific discipline to make international contacts with other fields of research at the general assemblies of the Conseil, and with their professional colleagues in other countries through the special meetings of their own union, and through the journals and bulletins of information it published, regardless of how their domestic associations had come into being, or how they might compete or quarrel. In consequence it must be admitted that it was a wise decision in 1919 to organise the new international cooperation on a national basis.

On the other hand it was equally important that this basis should be national without being governmental. It is true that the Conseil sometimes made appeals to governments; but it always retained its independence as a non-political body of scientists who were learning how to work together without regard to the political aspirations of their respective countries, at least from the time when the Conseil abandoned the meaningless distinction between former friends and foes, adopting a truly catholic concept of science as a universal quest for understanding. The problem was whether this idea would stand up to the critical test of the Second World War which broke out three days before the Conseil opened its seventh General Assembly in Washington (1939 September 4-15). Here the general feeling can be illustrated by a passage from the report of the Danish delegation:

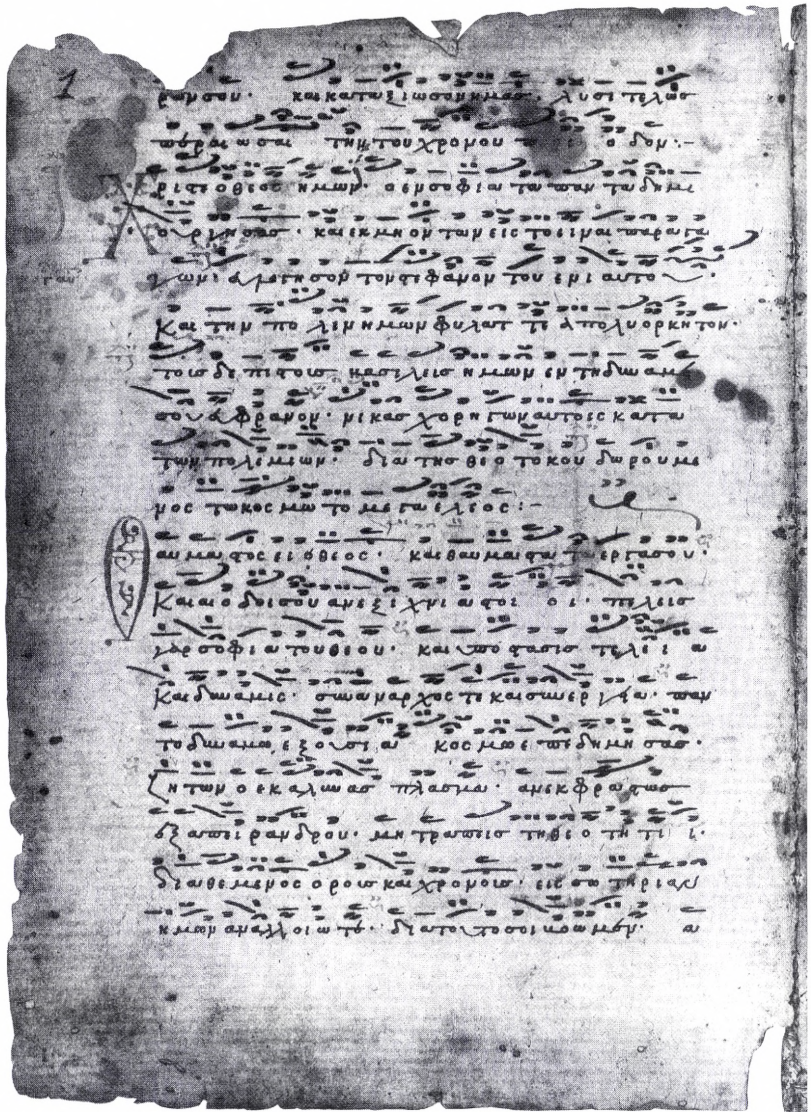
It is well known that there have been demands from several parties that the Union [i.e. the Conseil] ought to be based on a diplomatic convention between the governments of the member countries. This demand was motivated mainly by the expectation that the subscriptions from the various countries would arrive more regularly if there were a convention. The arguments against a diplomatic convention are greatly strengthened by the impression that the Union would have disintegrated in the war that has now broken out if it had been based on a diplomatic convention, and that afterwards it would be extremely difficult to rebuild it, whereas, as things are now, it does not cease to exist and will be able fully to resume its work as soon as the interested parties find this feasible [Lomh. II, 234].

These were prophetic words. The Conseil survived the war, and even came to play an important role in the attempts to establish a new universal order when peace was again restored.

The Union Académique Internationale was the humanistic counterpart of the Conseil, but organised its work in a different way. While the Conseil concentrated on the creation and support of world-wide professional unions which chose their own areas and forms of research, the Union aimed at specific projects proposed by members countries, approved by the general assemblies, and entrusted to one or more of the national academies which made special commissions responsible for the work. At the meeting in 1920 no less than sixteen such projects were adopted. Among them were, to mention only a few examples, a general catalogue of alchemical manuscripts, a repertory of collections and catalogues of Greek Manuscripts, and a new dictionary of Medieval Latin to replace the famous work by Charles du Cange (1610-1688). These three projects were given to the Belgian Academy, while Holland was entrusted with an edition of the works of the founder of international law, Hugo Grotius, and France with a historical dictionary of the Arabic language, and also with the preparation of a *Corpus Vasorum Antiquorum* [Lomh. II, 255ff.].

This way of organizing research was familiar to the Society. The *Regesta* had been produced in this way by a special commission, which had been succeeded in 1906 by a similar Commission for the Registration of Literary Sources of Danish History (found in other countries) which was still working after the war and now supplemented by a Commission for the Investigation of Privately Owned Sources of Danish History created in 1922 [Lomh. III, 403]. In consequence it was natural to join the ranks of the Union by participating in a number of its projects, of which we can mention only the most important.

Already from 1921 onwards J.L.Heiberg and his assistant Mrs.Ingeborg Hammer-Jensen (1880-1955) collaborated on the project of the alchemical manuscripts, which agreed well with Heiberg's long-standing work of editing ancient scientific texts. This went on until 1931, when the Society withdrew from the project, which it was difficult to pursue without the constant inspiration of Heiberg, who died in 1928. From the following year (1932) the Orientalist Johannes Pedersen played an important role on the steering committee of the Dutch *Concordance et Indices de la Tradition Musulmane* without the support of a Danish committee on this subject, whereas the Society in the same year established its own commission for the *Corpus Vasorum Antiquorum*, leaving it to the archaeol-



ogists C. Blinkenberg and Knud Friis-Johansen (1887-1971, elected 1928) to prepare the Danish material, which was published under the auspices of the National Museum.

Much attention was paid to a variety of philological projects. The idea of publishing critical editions of ancient Greek lexicographical works in a *Corpus Lexicographicum Graecorum* originated in Germany be-

A page from a Byzantine liturgical manuscript (Milan, Biblioteca Ambrosiana A 139 sup., fol. 1 verso). The book – a so-called *Sticherarion* – contains the texts and melodies for “*Stichera*”, monostrophic poems which were used during the church year. It was written – probably in or near Constantinople – in A. D. 1341, by two unusually skilled and competent scribes. The page reproduced here contains some of the *Stichera* used on September 1, the beginning of the Byzantine church year. In these texts, recurrent use is therefore made of a quotation from Ps. 64, 11 which speaks of “the crown of the year” – the “*circulus anni*” with its many feasts. – Some elements of the music are written in a very pale red ink – e.g. the musical variant in the first line of ΘΑΥΜΑΣΤΟΣ Εἶ ὁ θεός. To reproduce these, special photographs were needed for the entire facsimile volume (*Monumenta Musicae Byzantinae*, Main Series XI, Copenhagen 1992) – a costly procedure which was made possible by a substantial grant from the Carlsberg Foundation.

fore the war, but was taken over by A. B. Drachmann and his assistant Ada Adler in 1912. In 1926 Drachmann asked the Society to assume responsibility for the work by means of a special commission with both Danish and foreign members. This enabled Ada Adler to proceed with her monumental edition of the *Suidas Lexicon*, which appeared in five volumes from 1928 to 1938. Later the very versatile philologist Kaj Barr (1896-1970, elected 1945) was also connected with the commission. Another German project, initiated in 1899 by the Egyptologist Adolf Erman in Berlin and aiming at the publication of a comprehensive dictionary of the ancient Egyptian language, had a somewhat similar history. After the publication of the first volume (1925) the Egyptologist H. O. Lange was invited to assist with the preparation of the supplementary volumes, containing the textual evidence for the dictionary on which his pupil Wolja Christian Erichsen (1890-1966, elected 1955) was already working in Berlin. At Lange’s request the Society established a Commission for the Egyptian Dictionary (1929) and obtained a considerable grant from the Carlsberg Foundation for Erichsen’s salary. This enabled him to publish the first volume of the supplement in 1937 in the form of a facsimile reproduction (paid for by the Rockefeller Foundation) of his own beautiful manuscript. This enterprise perished in the war. After Lange’s death in 1943 the only member of the Commission was Johannes Pedersen, who proposed in 1952 that it be dissolved, all Erichsen’s attempts to revive the work on an international basis having failed owing to the political tension between the two Germanies that emerged out of the war.

Two other projects were on a much larger scale and were crowned with indubitable successes. The first was the New Ducange, planned by the Union in 1920 and meant to comprise the period A D 500 to 1,000. This made Danish participation impossible since there were no texts from this early period in Denmark. The situation changed in 1928, when the Union decided to extend the period until A D 1,500. The Society now created a Commission for the New Ducange with Drachmann as chairman, while the classical scholar Franz Blatt (1903-1979, elected 1949) led the group of scholars who excerpted the texts. Blatt had worked on the international *Thesaurus Linguae Latinae* in Munich 1928-1930 and was now professor of classics at the new University of Aarhus, where his Department of Classical and Medieval Studies soon became an international centre of the first rank where "the history of Latin was increased by a thousand years." It was here that he and his collaborators collected almost 86,000 excerpts from sources in Denmark for the *Novum Glossarium Mediae Latinitatis*; the first fascicle (the first part of the letter M) appeared in 1957, at a time when Blatt had become the director of the international project as a whole. Important by-products of this work were Blatt's dictionary of Saxo's Latin (1935-1957) and a general dictionary of Medieval Latin in Denmark, on which work is still continuing, as it is also on the New Ducange.

In all the projects mentioned so far the Society had joined in a work that had originated outside its own pale. The *Monumenta Musicae Byzantinae* had a different history, being due to the initiative and perseverance of a single scholar, who was destined to become one of its most renowned members. Already in 1931 Carsten Høeg had convened a small meeting in Copenhagen to discuss the possibility of producing critical editions of the manuscript sources of Byzantine Church music. They were scattered throughout Europe and the Near East in many different libraries and monasteries, many of which had been visited by Høeg on a long journey in 1931, from which he returned with a great collection of microfilms of his own making. The meeting resulted in a proposal to the Union from the Danish delegation to the general assembly in 1933, where it was enthusiastically approved. The Society was asked to supervise the project and set up a permanent commission chaired by H.O.Lange, and an international steering committee with Høeg as the principal promoter. The interest of the Union in the project was one of the reasons why it went out of its way to have a general assembly in Copenhagen in 1935.

The project certainly lived up to the expectations with which it had

been received. Owing to his preliminary work Høeg was able to publish the first volume of the main series of the *Monumenta* already in 1935 in collaboration with H. J. W. Tillyard in Cardiff and E. Wellesz in Oxford. It contained a photostatic reproduction of the famous *Sticherarium* codex in Vienna, and was followed three years later by a similar reproduction of a *Hirmologium* manuscript which Høeg had photographed at Mount Athos. A second series of *Subsidia* describing Byzantine musical notation was also started in 1935, and later several volumes containing transcriptions of the texts, lectionaries, and other material appeared [Lomh. II, 279ff.]. They were all printed in Copenhagen with financial support from both the Carlsberg and the Rask-Ørsted Foundations, and also from such foreign sponsors as the British Academy, the Americal Council of Learned Societies, and the academies in Amsterdam and Beograd as a testimony to the general interest in this spectacular and successful attempt to recover a rich cultural heritage that had been almost completely ignored in the West after the victory of Gregorian chant in the liturgy of the Church.

More than any other enterprise in this area the work on the great *Pāli Dictionary* became the society's own project, initiated by one of its own members, and pursued for many years without the assistance of the Union or other international bodies. It had a long pre-history, going back to the Danish Orientalist Carl Vilhelm Trenckner (1824-1891), a language teacher at the Royal Orphanage, where he devoted the last thirty years of his life to the study of sacred Buddhist literature and the Pāli language in which it was written. The many Pāli manuscripts acquired by Rasmus Rask and later utilised by Westergaard were copied by Trenckner and used by him for a number of important studies published by the Pāli Text Society in London. After his death his papers were deposited in the University Library in Copenhagen, where they were used for the famous Pāli Reader and Pāli Glossary by Dines Andersen which were mentioned in a previous chapter. At a conference on Oriental studies in Athens in 1912 Andersen presented a project of a general dictionary of Pāli to be prepared by an international team of scholars with headquarters in Copenhagen.

The response to this idea was very favourable, but the First World War made it impossible to proceed along the lines proposed by Andersen, who decided in 1916 to embark on the project himself with the assistance of his Swedish pupil Helmer Smith (1882-1956). Considering that the new Pāli dictionary of the Pāli Text Society, planned by Rhys Davies and beginning to appear in 1921, did not make his own work

superfluous, Dines Andersen in 1924 appealed to the Society, which decided to meet the cost of the printing over a period of nine to ten years, and left it to Andersen (who was the official Editor of the Society) to make all the necessary arrangements. In order to devote all his time to this task, – the size and difficulties of which he greatly underestimated – Andersen resigned from his chair at the University in 1927, having published the first instalment of the dictionary in the previous year, providing it with a detailed biography of Trenckner, whose name also appeared on the title page. From 1929 onwards annual issues appeared regularly, despite Andersen's failing health, and his constant wish to insert more and more additional material even at the proof-reading stage. Realising that he was unlikely to finish the work, Andersen called the Society to rescue in 1934, when a commission was established to take over at the time when Andersen would decide to leave off. It was headed by Andersen's successor at the University, Poul Tuxen (1880-1955, elected 1928), and in 1939 new assistants were engaged. Among them was Helmer Smith's pupil Hans Frederik Hendriksen (1913-1989, elected 1977), who later came to play a decisive role in the continuation of the project. After Dines Andersen's death in 1940 it progressed at a slower pace, and the last instalment of the first volume did not appear until 1944. It was followed by a rather inert and languishing period which was only broken in 1955 when the Commission was reconstituted with Louis Leonor Hammerich as chairman, and the international Indological community began to worry about the continuation of the project.

In this brief survey of the international, and largely philological projects pursued by the Society as such in the years between the great wars we have lost track of the scientific and scholarly research that took place outside the confines of the Society, although often with one or more of its members as inspirers or promoters, or initiated by younger people who later joined its ranks. However, a few examples are sufficient to show how the general opening towards the world made an impact on a number of disciplines which were already solidly rooted in a specific Danish tradition.

Here oceanographic research occupies a conspicuous position, now as before with Johannes Schmidt as the central figure in the biological domain, and with Martin Knudsen as organiser of the physical part of the work. The previous expeditions to Atlantic and Mediterranean waters were now continued with new investigations of the Sargasso Sea, first on board a four-masted schooner borrowed from the East Asiatic

Section from A Critical Pali Dictionary (Vol. I, p. 95) reproducing the entry *atta(n)* dealing with one of the most controversial terms of early Buddhism. The denial of a permanent self is central to Buddhism, but it is ambiguous. Although it is commonly assumed that the Pali scriptures reject the idea of a permanent self, the context would rather indicate that they primarily reject the assumption that the self can be described in terms of bodily or mental functions.

atta(n), *m.* [sa. ātman; other forms are tuma, ātuma(n), *q. v.*; see also 'atta]; declension see Kacc 211-214 (giving the stem as *atta-*; Sadd 158,25); *nom.* attā, Abh 92 (jīvo puriso +); 861 (citte, kāye, sabhāve ca so ~, paramattani); *acc.* attānaṃ, DN I 13,7 (sassataṃ); attāṃ, Ja VI 416,16*, etc., see 'atta; in verses also attanaṃ, see below (2c); *instr.* attanā, Dh 165; attena, see 'atta; *gen. (dat. abl.)* attano, Sn 334; Dh 343; *abl. also* attato (*q. v.*); *loc.* attani, Sn 666; MN I 138,3. — **1.** (a) the 'self', the 'ego', one's self (whose existence as a permanent or eternal being is always repudiated); selected passages where the problem of 'soul' is discussed: some Brahmans (saññivādā) maintain, in 16 ways, that the soul after death is conscious (saññim attānaṃ), DN I 31,1 foll.; some (asaññivādā) maintain, in 8 ways, that the soul after death is not subject to decay, and unconscious (asaññim attānaṃ), *ib.* 32,4 foll.; *do. n'eva-saññināsaññivādā*, *ib.* 33,3 foll.; others (ucchedavādā) maintain, in 7 ways, the theory of annihilation, *ib.* 34,1 foll.; oḷāriko attā rūpi, etc., DN I 186,3 (material); manomayo attā sabbaṅga-paccaṅgi ahindriyo, *ib.* 15 (consisting of mind); arūpi attā saññāmayo, *ib.* 187,3 (without form, made of consciousness); sassato . . . rūpi . . . saññi (etc.) attā, DN III 137,18—139,25—140,1; attā ucchijjati vinassati, na hoti param maraṇā, *ib.* 140,4; kittāvataṭṭā attānaṃ paññāpento paññāpeti, DN II 64,3 foll.; (n')atthi me attā, MN I 8,17-18; attanā va attānaṃ sañjānāmi, *ib.* 19; na hi no etaṃ attā vā attaniyaṃ vā, MN I 141,11 = SN IV 129,10; so loko, so attā (there is the world, there is the self), MN I 136,31; 137,12; eso me attā, Vin I 14,10; MN I 135,31; 138,15; 233,8; III 265,1; 271,25; n'etaṃ mama, n'eso 'ham asmi, na m'eso attā, AN I 284,28; II 164,30 = MN I 421,35; AN II 171,15; V 188,7; eso 'ham asmi, eso me attā, SN III 223,12; atth' attā . . . n'atth' attā, SN IV 400,16-18; attanā attānaṃ [— —] nānupassati, Sn 477 (Pj); ken' attanā gacchati Brahmaḷokaṃ, Sn 508; rūpi arogo . . . arūpi (etc.) attā, SN III 219,1 foll.; rūpaṃ (etc.) me attā, MN I 230,27; rūpaṃ ca attāṃ ca advayaṃ samanupassati, As 353,14; cakkhuṃ (etc.) attā . . . anattā, MN III 282,14-17 foll.; evaṃ-vaṇṇo attā hoti arogo param maraṇā, MN II 33,28; 41,10; ekantasukhī attā hoti sukhadukkhī vā, MN II 36,7 (cf. SN III 219,30); saññi attā hoti arogo param maraṇā, MN II 228,15; rūpādi-saṃkhāto attā, Pj I 188,18; sarīra-parimāṇo, aṅguṭṭha-parimāṇo, yava-parimāṇo, paramāṇu-parimāṇo attā, Ud-a 339,32; Sv I 192,20 = Ps I 260,24 = Vibh-a 354,28 (attā abhikkamati); Sv I 194,12 = Ps I 262,2 = Vibh-a 356,11 (abbhantare attā); — (b) sometimes the notion 'one's [own] self' is nearly related to the use of attā as a pronoun (see below (2)): Vin I 23,23 (yaṃ vā itthiṃ gaveseyyātha, yaṃ vā attānaṃ . . .); 185,10 (attho ca vutto, attā ca an-upanīto; cf. Sn 799: attānaṃ anūpaneyya); SN I 71,28 (kesaṃ nu kho piyo attā); AN IV 97,13* (attā hi paramaṃ piyo); Ja III 169,16* (yass' attā nālaṃ eko; Ct.); 279,16* (tena jahissat' attānaṃ, cf. Ja VI 416,16*); Dh-a I 6,13 (sarīraṃ attanā saddhiṃ na gacchati, scil. paralo-

Company and called the "Dana I" (1921-1922), and later on a small steamer of only 360 tons called the "Dana II" (1921-1922). Later Schmidt's dream of a general exploration of all the great oceans came true, when the Dana circumnavigated the world in 1928-1930 with financial backing from the Carlsberg Foundation. One of the results, – obtained with a newly invented echo sounder – was the discovery of a mountain ridge under the Indian Ocean which was baptized the Carlsberg Ridge. Huge collections of specimens of animal and vegetable life from depths of up to 5,000 m kept many Danish and numerous foreign scientists busy for a very long period. The final Dana-Report comprised almost one hundred separate instalments, appearing over sixty years, and has become one of the principal oceanographic works of the century.

Other expeditions went over land. The explorer Henning Haslund-Christensen (1896-1948) spent most of his life from 1923 until his death in Kabul in 1948 on a majestic series of travels to Central Asia and Mongolia, acquiring much new information about the culture of these distant regions, and much valuable material for the National Museum, which together with the Geographical Society of Copenhagen sponsored his work. This contributed to the establishment of ethnography as a recognized discipline, the real founder of which was Kaj Birket-Smith (1893-1977, elected 1951). As a young man he had participated in the ongoing investigation of Greenland and extended his study of Eskimo culture also to the Canadian tribes, describing it in *The Caribou Eskimos I-II* (1921-1924). His later work on *Kulturens Veje I-II* (The Paths of Culture) from 1941-1942 became an ethnographical classic and was translated into more languages than most other works by a Danish scholar.

Directly connected with a solid Danish tradition was the research in archaeology, which now assumed a greatly expanded scope. Previous work in the Mediterranean area was continued by Ejnar Aksel Dyggve (1887-1961, elected 1936), whose excavations in Dalmatia from 1922 onwards opened new vistas on the history of Late Imperial and Early Christian architecture. Further away in Asia Minor Frederik Poulsen (1876-1950, elected 1920) worked with his Greek colleague K. Rhomaïos at Kalydon, and ever further away the ancient site of Shilo in Palestine was excavated by Hans Kjær (1873-1932) in 1926 and later. At the same time the Assyriologist Otto Emil Ravn (1881-1952, elected 1947) assisted at the British excavation of Ur in Mesopotamia (Iraq), an area in which Thorkild Jacobsen (b. 1904) also worked with the American expeditions in 1932 to 1937. The greatest of all these projects was the

Carlsberg Expedition to Syria in 1931-1938, which uncovered the history of the city of Hama from its foundation in the third millennium BC to its destruction about AD 1,500. It was directed by Harald Ingholt (1896-1985); he and Jacobsen left Denmark in 1942 in order to pursue their careers at the universities of Yale and Chicago respectively.

In the area of Nordic archaeology much attention was paid to the Iron Age after Hans Kjær's discovery in 1929 of the remains of a village from this period at Ginnerup in the north of Jutland. The site was later carefully investigated by Gudmund Hatt (1894-1960, elected 1932), who won international recognition for his pioneering studies of the farming community and agricultural methods of the Iron Age. A project of historical interest was Dyggve's excavations of the ancient monuments at Jelling in Jutland, the residence of the Danish kings at the beginning of historical times. In this period the first chair of Nordic Archaeology was created at the University and filled by Johannes Brøndsted (1896-1965, elected 1939), who was the director of the National Museum and the author of a monumental work on *Danmarks Oldtid I-III* (The Antiquities of Denmark), published 1938-1940 on the eve of the Second World War.

One of the significant features of the period between the great wars was the acquisition of new facilities for scientific research. As we have noted before, the University of Copenhagen had for many years had both an observatory and a chemical laboratory, but physics was completely dependent on the laboratories of the Polytechnical High School, and mathematics had only a simple lecture room at its disposal. A new departure was made in 1917 when a special chair of theoretical physics was created for Niels Bohr, who immediately proposed the establishment of a separate institution for physical research. The result came in 1921, when Universitetets Institut for Teoretisk Fysik (University Institute for Theoretical Physics, since 1962 called the "Niels Bohr Institute") opened its doors. It was financed by both public and private means, and despite its name it also contained a spectroscopic laboratory where soon a new chemical element was discovered and named Hafnium (Copenhagen is *Hafnia* in Latin) by Bohr's Hungarian collaborator Georg von Hevesy (1885-1966, elected 1925). This was in the year 1922, when Bohr was awarded the Nobel Prize for his theoretical explanation of the periodic system of the elements. These two events gave the new institute a spectacular position in the international scientific community, and in the following year it was possible to extend its facilities owing to the very first grant from the new International Education Board,

through which some of the Rockefeller millions were channelled into research institutions in countries all over the world. In the following years Bohr's institute acted as a magnet for scientists from all over the world. Counting only visitors who have spent one month or more here we find that until Bohr's death in 1962 no less than 444 physicists from 35 countries had come to Copenhagen to work with the "Director of Atomic Theory" (to use an apt joke by Arnold Sommerfeld).

Other research centres followed in the wake of Bohr's institute. In 1926-1928 the Rockefeller Foundation made it possible to build a spacious institute for both medical and animal physiology to replace the more modest laboratory where August Krogh (1874-1949, elected 1916) had performed the work on respiration for which he had obtained a Nobel Prize in 1920. It also contained a biochemical department, at which Henrik Dam (1895-1976, elected 1948) together with Fritz Schönheyder (1905-1979) made the discovery of Vitamin K for which Dam was awarded the Nobel Prize in 1943. Most other medical research was done in laboratories connected with hospitals, such as the discovery that cancer could be artificially induced in rats, made by Johannes Grib Fibiger (1867-1928, elected 1916), a discovery which was also honoured by the Nobel Prize in 1926. The Rockefeller Institute was succeeded by a new institute for physical chemistry, built 1929-1930 as next-door neighbour to the Bohr Institute and headed by J.N.Brønsted. Another neighbour was an institute of mathematics, inaugurated in 1934 with Johannes Hjelmslev (1873-1950, elected 1914) and Harald Bohr (1887-1951, elected 1918) as the leading figures. The latter was a brother of the physicist and internationally known for his introduction of a new type of so-called almost-periodic functions.

CHAPTER XIX

The Society in War and Peace

When in 1939 Niels Bohr became the 17th President of the Society at the unusually early age of 53 he had been connected with it already since 1907 when he had obtained its Gold Medal for an experimental investigation (performed in the private laboratory of his father Christian Bohr) of oscillating jets of liquids. A few years later he had established his international reputation by his epoch-making application of quantum theory to atomic physics, which led to the understanding of the line spectrum of hydrogen (1913) and soon to a more general theory of spectra. Considering this achievement it was a matter of course that he became a member of the Society as soon as he assumed the new chair of theoretical physics in 1917, and that his first contribution to the Writings was the now famous trilogy of papers *On the Quantum Theory of Line Spectra I-III* (1918-1922).

Otherwise Bohr published only rarely in the series of the Society, whereas he became an unusually frequent speaker at the meetings, at which he currently reported on the progress of physics in the period between the wars. Thus in 1922 he presented his explanation of the periodic system of the elements for which he was given the Nobel Prize in the same year. Similarly in 1936 he made the Society acquainted with his new theory of the atomic nucleus which enabled him in 1939 to explain the phenomenon of nuclear fission discovered by Otto Hahn and Lise Meitner the year before. In a popular lecture in 1939 to Ørsted's old Society he also commented on the possibility of releasing nuclear energy on a large scale, stressing the

terrifying perspectives we would face if substantial amounts of uranium or thorium could really be made to explode; a closer consideration shows the situation to be such that there is no cause for alarm in this respect, although one can hardly say with certainty that any large-scale release of atomic energy is entirely ruled out [Niels Bohr's *Collected Works* 9, 462].

Thus Bohr was aware of the dangers of the atomic age from its very beginning. With his public spirit and humanitarian attitude he was also conscious of other dangers threatening civilization from the totalitarian

regimes, in particular since the Nazi party had come into power in Germany in 1933. Both he and his brother Harald served on the board of the Danish Committee for the Support of Intellectuals in Exile which brought scores of refugees to Denmark, where many of them came to play a role in the life of the country. Among them was the Jewish physicist James Frank (1882-1964), who was a personal friend of Bohr and stayed at the Institute in Copenhagen until he moved to Baltimore already in 1935. Another was the historian of mathematics Otto Neugebauer (1899-1990), who worked at the Mathematical Institute from 1933-1939, and a third was Bohr's former collaborator Georg von Hevesy, who again joined the Institute in 1934, here to develop his technique of using radioactive isotopes as biological tracers. Going to Stockholm in 1943 to receive the Nobel Prize for this work, he chose not to return to Copenhagen.

Already in 1927 the Society had asked Niels Bohr to succeed Vilhelm Thomsen as President. But this was the time when the birth of the new quantum mechanics developed by Schrödinger, Heisenberg and Dirac occupied all his time, and the answer had to be negative, as it was also on later occasions in 1934 and 1938. But when the offer was repeated in the spring of 1939, Bohr had changed his mind. War was now imminent, and it would be wrong to ignore an appeal to his experience and international status at a moment when unknown tribulations might be in store for both the country and the Society.

Bohr presided for the first time at a meeting 1939 October 20. At that time the Second World War had been raging for several weeks, Poland had been defeated, and the systematic destruction of both her national and academic institutions had begun, as a warning of what might happen to countries falling under the sway of Hitler's armies. In his first address to the Society

The President briefly mentioned the anxiety one must feel at the present moment for the society of our country, and for that scientific and scholarly activity the care of which is the purpose of our Society. He hoped that the Society might be fortunate enough to be able to provide its mite to reconstructing that collaboration between all nations in the fields of science and scholarship that had proved so fertile until now [Records 1939/40, 26].

No further references to the war found their way into the Minutes until 1940 March 15, when the President spoke once more about "the dangers and calamities which threaten the country". This meeting was attended by King Christian X, who was not a frequent guest of the Society. His

presence at an ordinary meeting was much appreciated as underlining the gravity of the situation and the need for national solidarity. Three weeks later the sinister forebodings came true. On 1940 April 9 Denmark was attacked and occupied by German troops, being completely unprepared for war. This paved the way for the German attack on Norway, where several weeks of hard fighting ended with the flight of the King and the government to England, while in Denmark the legitimate government reluctantly adopted a policy of collaborating with the occupying power.

The consequences of this latter decision gradually unfolded themselves. The occupation immediately severed the connections between the country and the free world, so that the Society also became unable to cultivate those international contacts that had loomed so large in its normal life. Nevertheless the first meeting after the occupation took place on the scheduled day (1940 April 12) with the only difference that it was called for a quarter past four in the afternoon owing to a curfew imposed by the German commander. Here the President explained that the serious events of the last days have made it impossible to have a meeting at the ordinary hour of 19 h 15 that we are used to having. But both the Secretary and I are of the opinion that it was both proper and important not to cancel the meetings, but to continue our work on the tasks of the Society in the service of science and scholarship [Records 1939/40, 45].

And so the work continued as best it could. The international exchange of publications dropped to a minimum, and no foreign members were elected for the duration of the war. But the Society succeeded in keeping the ordinary meetings going without serious disturbance, but also without much publicity or outward splendour. In consequence, the second centenary of the Society in 1942 became a very modest and strictly domestic affair, remembered abroad only by the Royal Society of Trondheim which cabled its felicitations. It was commemorated at an ordinary meeting 1942 November 13 (the very date of the foundation), at which no less than 55 members were present out of a total of 67 potential participants. The agenda was rather special. First, the Editor L.L.Hammerich placed before the Society the first volume of A.Lomholt's *Collections* which we have already mentioned in Chapter XVII; it was illustrated by a small exhibition of historical books, pictures and documents. Next the historian Aage Friis (1870-1949, elected 1920) presented a *Life of Hans Gram*, written by his brother about 1760, and now published by Langebek's old Danske Selskab as a greeting to its

sister Society. It was followed by a large volume on *Danmarks Kortlægning* (The Mapping of Denmark) by N. E. Nørlund, and finally by a history of the Carlsberg Foundation, written by its chairman Johannes Pedersen, and accompanied by a handsome gift of 200,000 kr.

After this demonstration of the scholarly vitality of the Society the President addressed the members in a remarkable speech. Summarizing the history of the Society from the early days when it was the only association for research in the country until the present when this role was taken over by numerous other institutions, Bohr stated his belief that the Society still had an important task to fulfill, both as a society "for the general evaluation of research, if not for performing it", and as a forum offering unique opportunities for scholars and scientists to inform each other. For

although the Society does not comprise all the fields of knowledge and research that deserve the name of science and scholarship, it gives rise to interconnections which no doubt were and still are of prime importance for the harmonious development of scientific efforts in our country, and for its cultural life in general [Records 1942/43, 46].

In a characteristic passage Bohr then continued by giving voice to the most burning question of the day:

When we ask whether our civilisation will still be able to flourish and bear fruit, we meet with the same conditions as those on which the continued existence of any living being depends. Here even the most penetrating knowledge of its components and structure does not provide an answer. But we are thrown upon the hope that a harmony may be preserved even if it can never be fully grasped but only suspected. Regardless of whether we consider individual living beings or whole societies this hope is expressed by their will to live. And when we think of our own culture, no doubt we all have a lively feeling of how strong such a will can be.

Returning to the question of the future of our Society we know only one thing, – that the fulfilment of our desires is inseparably linked with a propitious fate for our society as a whole, and that it is also inseparable from the preservation of the collaboration of all nations over the progress of science and scholarship. In this hope we trust today [ibid.].

With this profession of the faith and hope of its President the Society entered into its third century.

In 1943 the first and relatively quiet period of German occupation came to an end. The Danish Resistance Movement had grown in numbers and efficacy, and a clandestine "Freedom Council" was established to coordinate its activities. Frequent acts of sabotage became more and more harmful to the German presence in the country, and, refusing German demands to have saboteurs sentenced by German military courts, the government resigned on August 29, and the country came under direct German rule. What was left of the army was interned and disarmed, while the navy succeeded in scuttling its ships before they fell into the hands of the enemy. Soon there were rumours about an imminent action against Danish citizens of Jewish origin. It started in the night after October 1, but was largely a failure, at least from the German point of view. About 500 persons were apprehended and deported to concentration camps (where 52 of them died) while more than 5,000 men, women and children were brought to safety in Sweden in an amazing rescue operation organised by the Resistance Movement in and around the Capital.

The Bohr family had arrived in Sweden on the last day of September. A few days later Niels Bohr was flown to England where he learned about the secret project of exploiting nuclear energy for military purposes. Arriving soon afterwards in the United States, he was faced with the gigantic and already much advanced efforts to produce an atomic bomb. In 1939 he had judged this to be technologically impossible. The fact that it was feasible was truly frightening, and Bohr spent much of his time around the end of the war in attempts to explain the dangers of the atomic age to leading statesmen.

With Niels Bohr's escape to the free world the contact of the Society with its President was interrupted; but the regular meetings went on for the following year, the two chairmen of the classes (the mathematician J. Hjelmslev and the orientalist Johannes Pedersen) presiding in turn. The last season during the occupation began with a meeting 1944 October 20 commemorating the 300th anniversary of the birth of Ole Roemer (1644 September 25). On this occasion the Society published three separate studies of the life and work of the great astronomer. E. Strømgren wrote on *Ole Rømer som Astronom* (O. Roemer as an astronomer), and the young physicist and historian of science Mogens Pihl (1907-1986, elected 1971) dealt with *Ole Rømers videnskabelige Liv* (The scientific life of O.R.), while N.E. Nørlund dedicated his investigation of *De gamle danske Længdeenheder* (The old Danish units of length) to his

memory. All the members were also presented with a copy of Roemer's *Adversaria* bound in red morocco at the expense of the Carlsberg Foundation.

At this time the situation in Denmark had become seriously aggravated. Popular unrest had exploded in a general strike in July, and a curfew had again been imposed. In September the Danish police were dissolved, and many of their members deported, after which the German "Hilfspolizei" introduced a period of organised terror against the population. Under these circumstances the Society took several measures to prevent it from being obliterated by terrorist action. The Minute Books were microfilmed and the films evacuated to a safe place together with 36 boxes of publications and other valuables, including the two famous paintings by Krøyer and Vedel. The following meetings were advanced to 15 h 15, and several of them had to be cancelled, so that only eleven meetings were held out of the scheduled number of fourteen. The last meeting ended in the afternoon of 1945 May 4, only a few hours before the BBC announced the German capitulation on the Western Front. The following day the Resistance Movement took control of the country, with about 40,000 armed members, and supported by a Danish Brigade of 5,000 men trained in Sweden and now returning.

After the Liberation it was disclosed that several members of the Society or closely linked to it had played a leading role in the Resistance Movement. This was the case with Carsten Høeg, who had been in charge of its central registration office, and the physiologist Poul Brandt Rehberg (1895-1989, elected 1944), who had been captured and tortured by the Gestapo in Copenhagen but almost miraculously rescued together with many others when their prison in the centre of the city was destroyed by a precision attack by the Royal Air Force 1945 March 21. A future prominent member of the Society was the geologist Arne Noe-Nygaard (1908-1991, elected 1954), who now emerged from his clandestine existence as a member of the Freedom Council.

The Society was now faced with several problems. On the one hand it was desirable to resume its ordinary life as soon as possible, on the other to adapt itself to the changing international situation of the post-war world. The normalization began with Niels Bohr's return to the country in the summer of 1945. At an extraordinary meeting 1945 September 21 he was welcomed back by J.Hjelmslev, and re-elected President for a new five-year period reckoned from 1944 when the election ought to have taken place according to the Statutes. J.Hjelmslev

read an address signed by all the members, expressing their joy and satisfaction at Bohr's return after

the pressures of the war that caused various difficulties and obstacles, and also were the reason why we have been missing you for a couple of years,

– a remarkable understatement which was followed by a more explicit reference to Bohr's leading position in atomic physics, and also to his war-time (and still largely unknown) role as

guide and adviser for the recent work on the release of such gigantic sources of energy as must fill people with fear, uniting them in the hope you yourself have newly expressed of finding ways of making science (...) contribute to the harmonious living together of all nations.

The address concluded on a lofty note rarely found in official documents of the Society:

When we lift our eyes upwards towards the ceiling of this hall, our eyes meet the great painting of Prometheus stealing the fire from the gods. No better symbol of your work can be found [Records 1945/46, 28],

– words that clearly reflected the new feeling of awe and veneration of Bohr that now spread from scientific circles to the whole population, giving him a unique position as the prophet and sage of a new era.

More recognition followed before Bohr concluded the meeting with a retrospective paper on the development of atomic research. Johannes Pedersen announced that the Carlsberg Foundation (of which he was chairman) had decided to donate kr. 100,000 to a special fund bearing Niels Bohr's name. It was to support research in areas selected by Bohr himself, but was to be administered by the Society, which was able to approve the statutes already at a meeting on November 30. At that date the basic capital had increased to kr. 400,000 owing to contributions from private companies and other benefactors. Ten years later it was raised to kr. 1,060,000 thanks to a new Carlsberg donation on the occasion of Bohr's 70th birthday in 1955. It has since grown even more and has supported several important projects, such as the monumental edition of Bohr's *Collected Works*, which began to appear in 1972.

Shortly after the creation of the Niels Bohr Foundation the Society itself received a new legacy with a basic capital of Kr. 160,000, donated in memory of the scholar, Marcus Lorenzen (1847-1928), and destined to support research into both the Danish language and the Danish flora.

Its statutes were approved 1945 December 19 [Records 1946/47, 41ff.].

Being re-instated in his former position, Bohr was constantly re-elected President during the rest of his life, presiding over his last meeting 1962 November 16 only two days before his death. His twenty-three years at the helm was not the longest period of office in the history of the Society; but no previous President had contributed more to its prestige and reputation both at home and abroad, or been more able to use it as the basis of public initiatives of far-reaching consequences, as we shall see in the following chapter.

Contributing to the extended activity of the Society after the war was also a succession of distinguished Secretaries. In agreement with the well-established tradition they all belonged to the Mathematical-physical class, and had all made important contributions to science before taking office in the Society. Just before the war began, Martin Knudsen had been Secretary for 22 years. He now saw his many international connections broken, and although he carried on during the occupation he now felt too tired to assume responsibility for the great work of reconstruction that lay ahead. On 1945 October 19 he asked to be relieved from his office, and four weeks later he was succeeded by the mathematician Jakob Nielsen (1890-1959, elected 1926), who had been Treasurer of the Society since 1935.

The new Secretary was a captivating and amiable personality and eminently well suited to the task of re-instating the Society on the international scene. Being a village boy from the island of Als on the east coast of Schleswig, he had experienced the severe tensions between Danish and German in his native province, retaining throughout his life a deep understanding of cross-cultural interactions over and above mere international collaboration. At the University of Kiel he had abandoned himself to a wide range of scientific and scholarly interests before finally opting for mathematics, acquiring a profound knowledge of both Latin and German literature and modern languages as well. Forced like all young men from his province to fight with the Germans in the First World War, he served as a gunner at the Dardanelles, adding Turkish to his stock of languages, while his familiarity with the Turkish people opened his eyes to the values of non-European cultures.

After the war Jakob Nielsen spent a year as a professor of mathematics at Breslau; but when North Schleswig was returned to Denmark in 1920, his Danish origin got the upper hand, and he applied to the Danish Ministry of Education for a modest position at a secondary school just north of the new frontier. However, the Ministry offered him

a post at the Royal Veterinary and Agricultural School in Copenhagen, from where he went to the Polytechnical High School as professor of rational mechanics (1925). In the following years he established his renown as an authority on the topology of surfaces, a relatively new branch of mathematics investigating properties that remain unaffected by deformations. In 1951 this pioneer work made him the obvious successor to Harald Bohr at the University, where much of his research was done in collaboration with Werner Fenchel (1905-1988, elected 1946), who had come from Germany to Denmark in the fatal year of 1933. Nielsen's prominent position in the Society was underlined in 1949 when he became resident at "Lundehave", a large villa on the coast north of Copenhagen left to the Society in 1925 by a wealthy timber merchant Andreas Collstrop (1847-1933) as a "Home for Danish Scholars and Scientists", and previously inhabited by Otto Jespersen (1934-1943) and Vilhelm Grønbech (1944-1948). Later residents were Johannes Brøndsted (1960-1963) and Arne Noe-Nygaard (1964-1991).

Jakob Nielsen resigned as Secretary for reasons of health in March 1959 and died a few months later. He was succeeded by the spectroscopist Ebbe Rasmussen (1901-1959, elected 1951), who died already in October the same year just at the beginning of a new season of meetings. In his place the Society elected Christian Møller (1904-1980, elected 1943), a distinguished mathematical and theoretical physicist, born on Als like Jakob Nielsen, but educated in Denmark and now professor at the Bohr Institute. He had done important research on the quantum theory of both atomic and nuclear phenomena before becoming a recognised authority on the theory of relativity and its application to cosmology. His book *The Theory of Relativity* (Oxford, 1952) is still a classic.

Just after the war the latent problem of the proper size of the Society flared up again. It was discussed at meetings of the classes at the beginning of 1947, and not least August Krogh argued that a considerable extension of the membership was necessary. The matter was referred to a high-powered commission consisting of the President, the Secretary, the chairmen of the two classes, i.e. Johannes Pedersen and the geneticist Øjvind Winge (1886-1964, elected 1927); Krogh was not included. After more than eighteen months of deliberations the committee came up with a rather complicated proposal. The Statutes of 1938 had provided for the election of no more than 5 scientific and 4 humanistic members within each period of five years. This rule was now relaxed a little, so that 4 scientific and 3 humanistic members might be elected within any three-year period from 1948 onwards. This would allow the Society to

expand without fixing any maximum numbers. But a kind of lower limit was indicated by the stipulation that if the membership fell below 48 scientists and 36 humanists, each class was entitled to increase its membership up to these figures, but with no more than 8 scientists and 6 humanists in three years. In other words, let the Society expand, but as slowly as possible.

These new rules were adopted at a meeting 1947 December 12, and at the election in the following April seven scientists and four humanists were admitted. This brought the total figures up to 47 and 31 respectively. Owing to several later amendments of the rules the total membership rose from 68 in 1939 to no less than 117 in 1962. The number of foreign members was also increased in about the same proportion.

The debate about the membership in 1948 ended in a dramatic way. Finding the rate of expansion much too low, August Krogh decided to draw public attention to the situation in a most spectacular manner. At a meeting 1949 January 14

The Secretary read an "open letter" received just before the meeting from August Krogh, in which it was announced that he resigned from his membership on the same day. This announcement and his motivation for his resignation had been made public by Krogh at the same time. The President expressed the Society's regret of the step taken by August Krogh [Records 1948/49, 39].

Krogh's action was without precedent in the annals of the Society, from which no members had ever found reason to resign. It was all the more serious as Krogh was no insignificant back-bencher of the Society, but a Nobel Laureate and one of the most famous scientists of the country. Naturally the daily press gloated over the affair, while the Society tried to keep a low profile. Without inviting Krogh to explain his reasons

it was decided, in consequence of the open letter received from August Krogh at the previous meeting, to send him a reply regretting his retirement from the Society [*ibid.*, 41].

Nothing else was done. How strongly Krogh resented this cavalier treatment appeared when he made it known that he did not wish that the traditional commemorative speech should be given after his death, which occurred already in the following month of September. It is difficult to know how much harm this painful and ignoble incident did to the Society; but it certainly contributed to creating a distorted image of it as an ossified assembly of aged worthies out of step with the spirit of the times and opposed to any infusion of fresh blood.

The Second World War cast long shadows over Europe. In the years 1945-1949 the communist parties succeeded in assuming control of the governments in all the East European countries. This led to persecutions of scholars and scientists who refused to toe the party line, and also in the West scientists with real or alleged left-wing sympathies came under suspicion, in particular if they were acquainted with the "secrets" of the nuclear bomb. Everywhere the free flow of scientific information was seriously obstructed, and the free travel of scholars and scientists also became subjected to political or ideological control. Like many other academies the Society observed this development with regret, although it did not take definite steps to oppose it until several years later.

However, already in 1950 Niels Bohr had drawn attention to the dangers of the situation by his plea for an Open World in his well-known *Open letter to the United Nations*. This was a personal intervention wholly based on Bohr's unique status within the international scientific community, and the Society as such did not become involved in the political activity of its President until after the Soviet invasion of Hungary in October 1956. On 1956 November 9 Bohr once again addressed himself to the United Nations, a step on which he reported to the Society at a meeting on November 30 where

the President expressed the feeling of sympathy felt by all for the Hungarian people after the tragic events, and in this connection informed members about his letter of November 9 to the Secretary General of the United Nations. He further announced that the Society had granted an amount to the Danish Relief Committee for Hungary, and that they were prepared to give the best possible support when there was news about the fate of Hungarian scholars and scientists [Records 1956/57, 42].

What this meant became clear three months later. On 1957 February 16 Bohr called a meeting on the premises of the Society where the Rectors of the Universities and similar institutions discussed an offer from the Ford Foundation which would provide refugee students from Hungary with scholarships at Danish universities, the Society being asked to administer the grants. A small delegation was sent to Vienna to select suitable candidates. It returned with five students, a number which increased to twelve in the following September, and to twenty before the grants from the Ford Foundation stopped in 1959, after which the Society left the Hungarian students in the care of the new relief organisation Dansk Flygtningehjælp (Danish Aid to Refugees).

CHAPTER XX

The Presidency of Niels Bohr

The task of re-establishing the former routine of the Society began immediately after the Liberation. On the international scene the contact with other academies was resumed already in June 1945, when the Society received a four-day visit from the Secretary of the Royal Society of London, the physiologist Archibald V. Hill, who brought gifts in the form of a grant (in otherwise unobtainable British currency) for buying scientific equipment in England, in addition to a complete set of the wartime publications of the Royal Society which were missing from Danish libraries. With this handsome handshake the Society was welcomed back into the international community. A similar grant for instruments was received in 1953 and given to the young biologist Anders Munk. At the third centenary of the Royal Society in 1960 Hill's visit was gratefully remembered in an address from its Copenhagen sister academy.

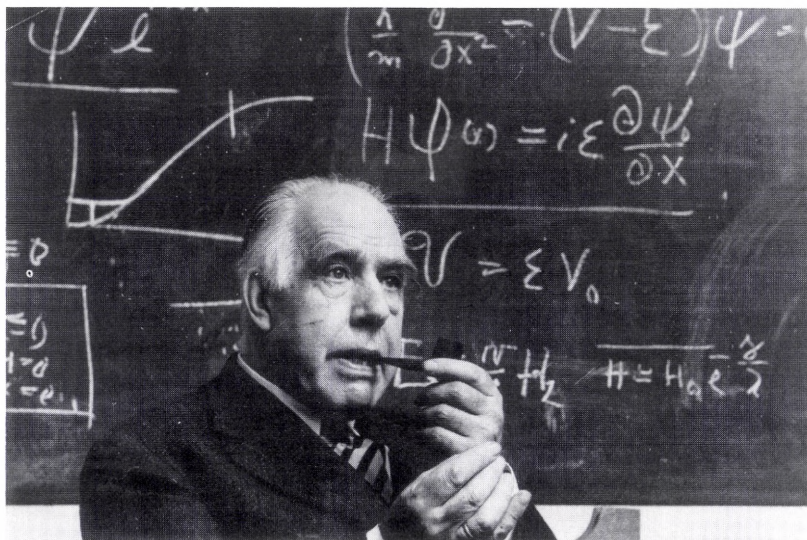
In the summer of 1945 it was also discovered that the two great international academic unions had survived the war and were prepared to resume their work in a true spirit of international co-operation, almost totally untinged by the prejudice and resentment which had made it so difficult to restore the relations after the First World War. This involved the Society in a series of undertakings which has increased in number until the present, making it a more energetic partner in international research than ever before.

During the occupation the Society had continued to pay its subscription to the Union Académique Internationale (UAI), with which formal contact was re-established in March 1946, when the Union held its annual meeting in Copenhagen. Soon afterwards the Society set up a special committee chaired by Carsten Hoeg to take care of the future collaboration. As we have seen above, the Union was primarily engaged in specific projects of research in some of which the Society had been involved already in the period between the wars. Among these the *New Ducange* was one of the most ambitious; it was now able to continue, from 1957 with Franz Blatt as the director of the entire project. Similarly the work on the *Corpus Vasorum Antiquorum* was resumed.

In the field of Egyptology the situation was different. Here the Society had been forced to scrap Lange's old project in 1952 owing to the political tension between the two Germanies. But in 1954 it decided to support a project of an *Histoire de l'Archéologie Musulman d'Egypte* proposed to the Union by K. A. C. Creswell. A few years later the project of building a large hydro-electric dam across the Nile at Assuan caused much consternation in many countries, since it implied that some of the most precious monuments of Ancient Egypt would be flooded by the river and lost to posterity. Here the Society did not take any independent initiative; but two of its members came to play an important role in the ensuing rescue operations. Thus K. E. Sander-Hansen (1905-1963, elected 1959) took part in a Scandinavian expedition sent to Nubia in 1960 to examine the situation, on which he reported to the Society in January 1961, while W. Erichsen became a prominent member of the UNESCO Commission, whose proposal for saving some of the monuments by re-erecting them on higher ground was eventually carried out.

A growing interest in Islamic studies, furthered by Johannes Pedersen and other Orientalists such as Kaare Grønbech (1901-1957, elected 1943) and Kaj Barr caused the Society to give financial support from 1947 to 1953 to the *Concordance de la Tradition Musulmane* published under the auspices of the Union. In the same area the Society was the host of a meeting of the steering committee of the *Encyclopédie d'Islam* which met in Copenhagen in September 1955.

The Society's "own" international projects belonged also within the pale of the Union. The *Monumenta* of Byzantine Church Music had preserved its impetus after the war and continued its publications with the collaboration of several foreign scholars, but still under the guidance of Carsten Høeg, who also caused the Society to join the Association Internationale des Études Byzantines in 1951. It was a little more difficult to get the *Pāli Dictionary* going again. In 1952 its collections and editorial office were moved from the University Library to the premises of the Society, where it was in charge of Hans Hendriksen, who had only a single assistant until 1955, when the Pāli Commission was reconstituted with L. L. Hammerich as chairman. But nothing else happened until 1957, when a conference of Orientalists in Munich passed a resolution expressing anxiety for the project and urging its continuation. In consequence the Commission decided to re-organise the project on an international basis. This was proposed to the Union by Hammerich at a meeting in 1959, and an international committee assumed responsibility for the project, the headquarters of which were still to be in Copenha-



Niels Bohr (1885-1962). Seventeenth President of the Society (1939-1962). – Photographed after a lecture in 1957 (*The Niels Bohr Archive*).

gen. The publication was now resumed with the first fascicle of Vol. II which appeared already in 1960. In the following year Hammerich visited a number of Asian countries from Sri Lanka to Japan in order to engage a number of Buddhist scholars in the project. The latest issue completing the vocal section of the Dictionary appeared in 1991 as Fasc. 17 of Vol. II. At the same time the support from the Carlsberg Foundation and the Danish Research Council was discontinued; an international conference in Copenhagen in November 1990 revealed that the project was going to continue with Japanese support, and that the consonant section might be completed within twenty years.

Besides the Union Académique, the Conseil International des Unions Scientifiques also resumed its work after the war with a General Assembly in London in July 1946 and now became known chiefly by its English acronym ICSU (International Council of Scientific Unions). Bohr, Krogh and Nørlund represented the Society at the London meeting. In 1949 the Council of ICSU met in Copenhagen on the premises of the Society, but a national ICSU committee was not formally created until 1955. However, the Copenhagen meeting resulted in the establishing of several new national committees for various disciplines, beginning

in 1950 with Science Abstracting (later called Scientific Documentation), and continuing in 1955 with national committees for the International Unions of both Physiology and Biochemistry. In 1961 the Society established similar committees for Geology and Biophysics, while the national committee for Medical Science was set up in the same year by the Society in collaboration with the Danish Medical Society.

In other cases such national committees arose without the assistance of the Society. This was the case with the Danish National Council for Oceanography that was created by the respective scientific associations. It came into being in 1959 and was chaired by Einer Steemann Nielsen (1907-1989, elected 1958), who was one of the veterans of the Dana expedition 1928-1930, and also a leading figure in the new Galathea expedition which circumnavigated the world in 1950-1952, but with which the Society had no direct connections.

There is no reason here to go into the details of this development, which gradually extended Denmark's membership of more and more international organisations of scientific research. A relative peak was reached in 1978, when the country had become a member of all the 19 unions which constituted the ICSU family at that time. In 1991 the number of national committees had risen to 26, a number that no longer exhausted the growing list of ICSU members. But it is important to point to a significant change in the structure of this conglomerate of national committees. It began in 1963 when the national committee for geography asked the Society to take it under its wings, even if it had been established in 1938 as an independent body without the help of the Society. Other independent national committees adopted a similar course with the result that the Society eventually became responsible for the relationships between ICSU and all its Danish committees, with a central ICSU Committee as coordinating body.

This development gave the Society a definite role as the ordinary connecting link between ICSU and all its national committees, whose members are formally elected or approved at a meeting of the Society, on the premises of which the individual committees meet and to which they present annual reports of their activities. From the financial point of view this arrangement has proved to be highly satisfactory to the various unions, whose annual subscriptions to ICSU are paid by the Society, which is again reimbursed by the Ministry of Education, acting in this way as a kind of foreign department of the latter. No doubt this role of the Society has contributed to placing it in a more conspicuous position than before on the map of the scientific community of the country.

At the very time when the great international academic associations began to resume their activities, the United Nations launched a highly ambitious organisation for promoting education, science and culture on a world-wide scale. UNESCO was founded in London in November 1945 at a meeting at which Jakob Nielsen participated on behalf of the Danish government. For unlike ICSU and the Union Académique UNESCO was conceived as a governmental organisation, based on a network of national committees whose members were appointed by their respective governments. This implied that it had no formal connections with independent learned societies. However, the Society for several years enjoyed a rather close relationship with the new organisation owing to its Secretary and President. Thus the Society was asked to nominate a member for the first Danish national committee for UNESCO, which was set up by the Ministry of Education in the autumn of 1947; the choice fell on Niels Bohr, who served as a consultant to the committee until 1955, when he was succeeded by the biologist K. Linderstrøm-Lang (1896-1959, elected 1935) and later by L.L. Hammerich (from 1959). In the meantime Jakob Nielsen had become a prominent figure in UNESCO, where his international orientation and diplomatic ability were highly appreciated. He served on the executive board of the organisation from 1952 to 1958, and after his death he was remembered in an obituary by its chairman, Sir Benjamin Bowen Thomas, as

completely and utterly devoted to the service of humanity as a whole (...). In a sense he was the keeper of the Board's conscience (...) leaving with those of us who knew him the abiding memory of his powerful, energetic frame, his bright, blue eyes and ready smile, his high standards, his unselfish willingness to accept the tasks which we only too readily entrusted to him. An admirable representative of his people, a true son of Denmark, a distinguished scholar, a great public servant, a very humble, modest man [Records 1959/60, 115f.]

– heartfelt and moving words that were justly repeated when the mathematician Børge Jessen (b. 1907, elected 1939) addressed the Society in commemoration of one of its greatest Secretaries at a meeting 1960 April 22 [Records 1959/60, 115f.]. In this connection it is also worth noting the considerable role which Jakob Nielsen came to play, – although he was not a physicist – in the international deliberations which led to the creation of CERN, the great laboratory for research into nuclear and particle physics established by thirteen European countries in Geneva by a convention signed in 1953 and involving Denmark, but not the Society

as such, in a new and fascinating form of international scientific cooperation.

Turning now to more domestic matters after the war we find the Society in a new public role on the political scene. Already when the first Parliament met in the autumn of 1945, several members from various parties argued that the restoration of the country after the dark years of the German occupation presupposed more public support for research of all kinds. In consequence a general Commission for Promoting Science and Scholarship in Denmark by Government Initiatives was set up in 1946, with three sub-committees chaired by Carsten Høeg (the humanities), the physicist H.M.Hansen (1886-1956, elected 1950) (the sciences), and Jakob Nielsen (young researchers). The concrete results of this initiative were by no means spectacular, and there was a growing feeling that more drastic measures were necessary. This gave rise to perhaps the most important step ever taken by the Society in the public domain.

It began with an independent appeal to the population as a whole made by its President without previous consultation with the Society as such. On 1951 January 18 Niels Bohr made a speech, broadcast on the Danish Radio, in which he said that

if our country is not to be left behind and to lose a position that is of equal importance for both social progress and cultural security, it is absolutely necessary also in this country that science and scholarship should receive more support than before (...). We must realise that if we fall behind other nations in the scientific field, we shall have cut ourselves off from possibilities that will be of decisive importance for the conditions of living in our country, and for the confidence of its people in the future of our cultural life. This matter does not only concern the scientific world, but the people as a whole ("Politiken" 1951 January 19).

At the meeting of the Society the next day Bohr made a proposal that the Society as such should address the Government in an official letter along the lines he had indicated in his speech on the Radio to which no doubt most of the members had been listening. No serious objections were raised, and the President and the Secretary were unanimously authorised to prepare and despatch a letter to the Minister of Education. This was done with a remarkably short delay, and at the next meeting on February 2 the members were acquainted with the wording of the letter, the contents of which they had already approved in principle. The letter is much too long to quote in its entirety, but a few passages will

illustrate both the underlying philosophy and the concrete proposals made by Bohr. He began by asserting that it was the duty of the Society to keep an eye on the conditions in which research had to be carried out in Denmark, and that its members

have for some time with anxiety observed how these material conditions correspond less and less to the importance of the pressing problems.

Referring to his address on the Radio Bohr went on to point to two areas in which it was imperative to take action. Firstly, it was necessary to improve the conditions and lighten the circumstances of the student population at the universities and other institutions of the same kind; how this was to be done was not said. Secondly, there was an urgent need for extending the possibilities for scientific and scholarly research by annual grants from the state, something which had in other countries

been regarded as an essential element of the work of restoration after the war (...). Here one must distinguish between that scientific investigation which directly aims at solving the specific problems which are at any given time posed by the function and needs of society, and that fundamental research which primarily aims at the extension of our knowledge of the world of nature and of man, thereby laying the foundation for and giving impetus to the solution of social problems.

This assertion – that “society” would ultimately benefit not only from technical, but also from fundamental research in “pure science” – was a recurrent theme in the post-war debate on science and society. It was a vague and general assumption out of tune with the many qualifications and precisions which usually marked Bohr’s utterances on any subject matter, and it is clear that neither he nor the members of the Society in general would believe it without reservations with respect to a number of disciplines of great interest for fundamental research, but of no social or economic importance whatever. On the other hand, it was a good argument which might impress political circles with only a slight understanding of the intrinsic value of fundamental research as such, and here it was used without hesitation. Moreover, it was followed by rather precise suggestions on how the new proposals might be implemented.

In the field of technical research Bohr proposed that the existing Technical-Scientific Research Council, – a governmental body created in 1949 – should be supplemented by two similar bodies for agricultural and medical research respectively. They should be set up by the state in agreement with a larger circle of experts that the Society would not be

able to provide from its own ranks. But with respect to fundamental research the situation was said to be different, for this was precisely the field to which the members of the Society devoted their activity and endeavour. Therefore, it was only natural that the Society should make its position clear and also make concrete proposals to remedy the situation.

Bohr then underlined the fact that the country had been able to keep abreast of the scientific development because grants from the government had been supplemented by support from the Carlsberg Foundation which according to its statutes supports undertakings that are not included among the aims that naturally must be considered as objectives of the state, even if it has previously given extraordinary support to university institutions proper, for instance by paying for the erection of an Institute of Mathematics, and by giving generous support to an extension of the Institute for Theoretical Physics, to the establishing of an up-to-date astronomical observatory as well as various biological laboratories.

However, future burdens cannot be shouldered by such funds alone, among other things because of the decreasing value of money. Bohr therefore concludes that

as circumstances have developed, it will no longer be possible for this country to follow that rapid development of science which opens up for unceasing new possibilities of results of the greatest importance for the life of society, – unless the state assumes the task more efficiently of supporting fundamental research and its applications as a part of the attempts to restore the prosperity of the country.

The document ends with two concrete proposals. Firstly, the government is asked to support fundamental research by an annual grant of roughly the same magnitude as that distributed by the Carlsberg Foundation, to be adjusted with respect to inflation on later occasions. Secondly,

it is assumed that these new means are not to be spent on the building of laboratories or the provision of permanent equipment, but that they are to be used to provide special equipment and apparatus, and to secure the personnel that is necessary for the performance of the scientific investigations [Records 1950/51, 42-45].

This demarche was certainly a new feature of the activity of the Society. Previously it had often applied to the government for support of its own

enterprises. But here it spoke on behalf of the scientific community as a whole and, in a way, on behalf of society as such, based on a sense of responsibility for the general welfare of the country as depending on its scientific potential. This reveals a renewed self-understanding of the Society as a private body with public responsibilities, almost as a reminder of the early days when it was the only one of its kind and as such the natural guardian of the scholarly and scientific domains. That the Society now unhesitatingly assumed this role was no doubt due to the influence and status of its famous President. However, to realise the full implications of the document one must also consider what it did not say. For while it proposed the establishing of new Research Councils for agriculture and medicine, it did not suggest that any similar public body should be created for that fundamental research in which the members of the Society were engaged. It only asked that the government would provide the money for more activity in this field. This may be so construed that the Society as such was ready to assume the role of a Research Council for both "pure" science and the humanities on a par with the existing or proposed Councils for "applied" or technical research. Even if this was not said in so many words, it was sufficiently hinted at and could be read between the lines of the final passages of the letter.

The address to the government was backed by many prominent figures in public life, and on the very day when it was read to the members of the Society, a large demonstration of 6-7,000 students and university teachers gathered in front of the House of Parliament with demands that the government should take more serious initiatives, presented to the Prime Minister by H. M. Hansen in his capacity of Rector of the University of Copenhagen. The Minister of Education, the Old Testament scholar Flemming Hvidberg (1897-1959) took charge of the matter by proposing a bill establishing Statens Almindelige Videnskabsfond (The General Science Foundation of the State) as a general agency for distributing government money for research. Bohr immediately informed the Society of this step at a meeting 1952 January 25, and the bill became law on June 7 in the same year. It aimed only at domestic research, the Rask-Ørsted Foundation continuing to cater for foreign affairs.

Thus the efforts had borne fruit, although not quite in the way which the Society had envisaged in its letter. No separate research councils for agriculture and medicine were established, and the Society was given no special status with respect to fundamental research. Instead the new Foundation was divided into five sections, each of them disposing of a

fixed percentage of its total annual resources, viz. 15% to agriculture, 15% to medicine, 42% to natural science, 21% to the humanities, and 7% to the social sciences. The total support amounted to kr. 2,000,000 per year; this was more than what the Carlsberg and the Rask-Ørsted Foundations had had at their disposal. The role of the Society as such was modest. It was asked to nominate three members to the central board of the Foundation, a figure that was reduced to two in 1959, the third being transferred to the new faculty of science at the University of Aarhus. But everything considered, the conditions for research in the country were now really improved, and the Society had reason to take pride in its initiating role in the whole affair.

The increased international activity of the Society and its new appearance on the scene of domestic science policy were not accompanied by great changes of its ordinary business. The fourteen annual meetings went on as before, and the old custom of beginning at 19 h 15 was resumed after the Liberation. The endemic question of the size of the membership gave rise to discussion on more than one occasion and to the establishment of a long drawn-out Commission for Revising the Statutes in 1954; it produced new versions both in 1956 [Records 1955/56, 157-165] and in 1962 [Records 1961/62, 201-209], resulting in the increased numbers we have already quoted in the previous chapter.

As far as the ordinary publications were concerned, the only change followed from a decision made by the humanistic class in 1956 to unite all its publications into two parallel series of *Historisk-filosofiske Skrifter* (Historical-philosophical Writings), resp. *Meddelelser* (Communications). This meant that the series devoted to philosophy on the one hand and archaeology and history of art on the other were discontinued after the completion of the volumes in actual progress. At the same time a proposal for creating a new series of Communications on Atomic Physics was discussed, but soon again abandoned.

Among the occasional publications we have already mentioned the works that appeared in 1942 to mark the bicentenary of the Society. In 1946 they were followed by *Tycho Brahe's Description of His Instruments and Scientific Work*, an English translation by H. Ræder of Tycho's *Astronomiae Instauratae Mechanica* (1598) edited by E. Strömngren and his son Bengt Strömngren (1908-1988, elected 1939). It was published to mark the 400th anniversary of the birth of the great astronomer. Another commemorative work was *Johan Nicolai Madvig: Et Mindeskrift*, a collection of essays on the life and work of the 10th President of the Society. It was published in 1955 on the occasion of his 150th birthday and fol-

lowed by a second volume in 1963. Another contribution to the history of philology was a *Low German Manual of Spoken Russian*, compiled around AD 1600 by the German merchant Tönnes Fenne, who had spent many years travelling in Russia. His work comprised both a dictionary and a phrase-book of considerable interest for cultural history and philology. It was published by L. L. Hammerich and A. Stender-Petersen in 1961 in an off-set printed facsimile of a manuscript in the Royal Library, followed in 1970 by a printed edition with an English translation. Later the Society published two companion volumes to facilitate the study of this rich material. A Russian-Low German dictionary edited by the Dutch scholar A. H. v. d. Baar appeared in 1985; it was followed in 1986 by a similar German-Russian dictionary.

In 1961 A. Lomholt was also able to present the fourth volume of his impressive *Collections* of material for the history of the Society, which on this occasion honoured his achievement with its Gold Medal. But this was not the end of his long and patient efforts. A fifth volume of the *Collections* appeared in 1971 in the form of an annotated and lavishly illustrated catalogue of the manuscripts in the archives of the Society; his own *Lærdomsmosaik* was printed in 1962 at the cost of the printing house of Bianco Luno in recognition of its close connection with the Society over the past 125 years.

Now as before the ordinary serial publications of the Society were exchanged for similar publications of other academies or institutions. This business had amounted to 453 exchanges in 1944, a figure which rose to 714 in 1961. This connected the Society with sister associations in no less than 64 countries spread over all the continents of the world. As such these exchanges formed one of the most important activities of the Society. But the production and distribution of the various publications also meant a heavy strain on its finances, since the items were sent free of charge to the recipient, while the copies received in exchanges by the Society were also presented to Danish libraries without charge. Since the cost of production rose drastically in this period owing to the general inflation, the annual budget of the Society increased all the time, as a few figures will show. Notwithstanding the conspicuous increase in all these items, the annual accounts often showed considerable deficits, which were usually covered by extraordinary grants from the Carlsberg Foundation.

In this period a new item appeared on the expense sheet of the Society in the form of travel expenses for members living far away from the Capital, in particular those who were connected with the rapidly

Income of the Society derived from	1946	1962
Interest from capital	27,000	35,000
Sale of publications	5,700	60,000
The Rask-Ørsted Foundation (for foreign relations)	10,000	35,000
The Government (for printing and exchange)	31,000	130,000
The Carlsberg Foundation	20,000	70,000

growing University of Aarhus. The number of Aarhus members rose from three in 1943 to fifteen in 1962; they were obviously in an unfortunate position compared with the Copenhagen members, who could attend a meeting at the very slight cost of a couple of tramway tickets. In 1952 the Society made the magnanimous decision to grant no less than kr. 50 to Aarhus members who took part in a meeting, on the condition that they made a communication (which would rarely be the case), or if new members were to be elected. This would amount to no more than three "free" voyages per year. In 1958 the reimbursement was doubled to kr. 100, but on the same restrictive conditions. The Society itself took no further step to remedy the situation; but in 1961 the Carlsberg Foundation came to the rescue of the provincial members by accompanying an increased annual grant by a most unusual note stating that "The Board of Directors would appreciate that the Society, in consequence of the increased grant, would make it possible for members living in Aarhus to attend its meetings more frequently" [Records 1960/61, 70]. In the following month of October the Cash Commission of the Society took notice of this hint by raising the reimbursement to kr. 150 for any meeting without restrictions [Records 1961/62, 42].

Niels Bohr presided over his last meeting on 1962 November 16. With his unexpected death only two days later an unusually long and fertile presidency came to an end. It had been marked by the horrors of the World War, the anxieties of the Occupation, and the reshaping of a new and fragile international order. No previous President had had to cope with problems of a similar magnitude, and none of his predecessors had enjoyed a similar world-wide reputation both for his unique contribution to science and for his unflinching dedication to the general welfare of mankind. It was only natural that the Society should honour his memory in a singularly lofty and dignified manner at a meeting on 1962 December 14. It was chaired by Johannes Pedersen and attended by

King Frederik IX and Queen Ingrid. No less than 79 domestic members were present, supplemented by several prominent foreign members from the international world of physical science.

The first speaker was the Secretary Christian Møller, who had been Bohr's collaborator in theoretical physics for three decades. He gave a detailed account of Bohr's life and scientific achievements, ending with a peroration which aptly expressed the common opinion of Bohr:

Geniuses belong to the world as a whole, and only a few have been as true citizens of the world as Niels Bohr throughout his work. But we also know that he was so intimately connected with Danish culture and the Danish mode of thought and feeling that, – if he had grown up in another country – he would not have been Niels Bohr. We are allowed to take pride in the fact that this man came from our country, and we are profoundly grateful that he, – for whom the whole world lay open – chose his native country as the scene for his long and beneficial work [Records 1962/63, 83].

After Møller the physicist Leon Rosenfeld spoke about Bohr's philosophical ideas, in particular the concept of complementarity, maintaining that

Bohr's preoccupation with philosophical problems did not originate in his physical research, but sprang from general epistemological considerations about the function of language as a means of communication and also that our experience [Records 1962/63, 92]. We owe to Bohr a huge extension of our scientific and philosophical horizon. He has given us an idea of the world that is rich in content and deep in harmony, and a view of the purpose of science that makes it universal and more human. But his most precious gift to us who have known him is the shining example of his own life, – a life intimately devoted to truth, full of wisdom and love of man [ibid, 96f.].

Finally Johannes Pedersen spoke briefly about Bohr's role in the Society, and after the King and Queen had left, the celebration finished with a number of more personal reminiscences of Bohr told by L.L. Hammerich, the physicist Victor Weisskopf, and the biologist Ole Maaløe (1914-1988, elected 1960).

CHAPTER XXI

Within Living Memory

The most recent period in the life of an institution is not the most convenient topic for a historical exposition. The wealth of details is more conspicuous than in previous periods. Many of them are in the living memory of the actors, many of whom are still active on the scene or observing from the wings. And being close to the events, the historian runs the constant risk of working in a distorted perspective, in which the distinction between the essential and the peripheral is blurred. Such difficulties must be borne in mind when we approach the history of the Society in its three most recent decades.

One general feature of this period is easy to discover. More than ever before, the life of the Society is now influenced by the world around it. It had never been a complete ivory tower; but compared with the situation a hundred years earlier it is undeniable that events on the political scene both at home and abroad often had surprisingly strong and quick repercussions on what happened to the Society and on the initiatives it took.

During this period the material circumstances of the Society were much improved by an overall renovation of its premises, undertaken by the Carlsberg Foundation in order to mark its centenary in a manner from which the Society would benefit. It began in 1974 under the direction of the architect Jørgen Bo, and was completed in time for the jubilee of the Foundation in 1976. The assembly hall was redecorated and provided with new leather chairs and settees for about one hundred people. A large reading room was established and provided with a small reference library, and other books, and four small chambers were converted into personal studies for members who had no such facilities in town. But the most conspicuous innovation was the transformation of the huge loft of the building into a very spacious hall with several interchangeable sets of furniture, so that it could be used either for the common suppers after the meetings, or as a lecture room for two hundred people, or again as a conference room for scientific symposia. This enabled the Society to expand its public activity. In general the innovation made the premises more adapted to the needs of the members, just as a new string of offices made life easier for the clerical staff.

We note here that A. Lomholt resigned as Principal in 1971, being succeeded by Mrs. Lise Fremm (1971-1986) and later by Mrs. Pia Grüner M. A.

In this period the ordinary meetings went on as usual, but from 1979 onwards on Thursdays instead of Fridays. A small but significant change of the routine took place in 1990 when a brief period after each communication was reserved for questions from the audience. Otherwise the life of the Society assumed a more social character than before, in particular because of a series of one-day excursions on which members were joined by spouses or friends; they began in 1971 with a visit to the island of Hven with its memories of Tycho Brahe. Later followed an excursion to the rural palace of Ledreborg, still inhabited by a descendant of the first President, Count Knud Holstein (1979). The islands of Samsø and Møn and the former Danish province of Scania have also been visited.

Several meetings in this period are remembered for their particularly festive character, such as the great celebration 1976 February 7 in honour of the physicists Aage Bohr (a son of Niels Bohr, b. 1922, elected 1955) and Ben Mottelson (b. 1926, elected 1974), who had shared in the Nobel Prize in physics for 1975. Another great occasion was the centenary of the birth of Niels Bohr, which was marked by a special meeting 1985 October 1 in the aula of Copenhagen University where B. Ström-gren addressed a numerous gathering, including many foreign members, on Bohr's scientific life and work for the Society, while a foreign member, the Dutch physicist H. B. G. Casimir, spoke of Bohr's epistemological ideas. Even more memorable was the celebration of the 50th birthday of the Royal Protector of the Society Queen Margrethe II. According to the personal wish of Her Majesty the Society arranged 1990 April 3 a special one-day symposium with the Queen as the guest of honour. Here six members spoke on various aspects of modern science and scholarship, and lively discussions followed before the day ended with a festive dinner in the aula of the University for the Queen, her Consort Prince Henrik, and about one hundred members, most of them accompanied by their spouses. The proceedings of the symposium were published in the following summer in a book with the suggestive title *Videnskabens Enhed - ?* (The Unity of Science - ?).

During the last three decades the elections of the Presidents have followed a more regular pattern than before. According to tradition Niels Bohr had to be followed by a member from the Humanistic class, and 1963 February 8 the votes were cast in favour of Johannes Pedersen.



Franz Blatt (1903-1979). Member of the Board of the Carlsberg Foundation 1957, chairman 1971-1976.

The historian Kristof Glamann (b. 1923, elected 1958). Member of the Board of the Carlsberg Foundation 1969, chairman 1976.

He was now in his 80th year and one of the most distinguished scholars of the Society as the doyen of Semitic studies in Europe. He was also deeply familiar with Danish academic life and the affairs of the Society, having been chairman of the Board of the Carlsberg Foundation 1933-1955 and of the Historical-philosophical class since 1942. In his first year as President the Society began a long-lasting sort of *examen de conscience* to find out whether its activity was adequate and in step with the times. The zoophysiologicalist Torkel Weis-Fogh (1922-1975, elected 1961) was sent to London in January 1963 to report on the activities of the Royal Society, and in April a special Commission for Discussing the General Activity of the Society was set up.

It was also Johannes Pedersen who had to steer the Society through the troubled waters of the famous matter of the Icelandic manuscripts. In 1964 it became known that the government intended to give a considerable part of the Árni Magnússon collection back to Iceland as a part of the cultural heritage of the old republic in the Atlantic. This gave rise to a heated debate both within and far beyond the academic community. In

*Johannes Pedersen (1883-1977)
Eighteenth President of the Society
(1963-1969).*



the Society the matter was raised at a meeting of the Humanistic class in October 1964, and after much discussion and internal strife the Society as a whole adopted a resolution on November 27, underlining the fact that all the necessary means for studying these treasures were at hand in Copenhagen, and concluding that

The Society must accordingly deplore the interruption of a fruitful scholarly cooperation that would result from the transfer to Iceland of an essential part of the Icelandic manuscripts, and urgently recommends that the government and Parliament seek another solution [Records 1964/65,55].

It is worth noting that the Society did not here refer to the legal argument, viz. that the manuscripts belonged to the University according to Árni Magnússon's testament, as the Supreme Court also admitted. However, here it defended a lost cause. In May 1965 an act of Parliament authorized the transfer, which began in 1971. In the history of the Society this episode was of more than passing interest as the first, but certainly not the last, case in recent times in which it broke with the tradition of not interfering in public matters on its own initiative.

In 1968 the President was re-elected for another period of five years, only to resign for reasons of health one year later. As his successor he had already designated the astronomer Bengt Strömgren, who was elected without opposition. The 19th President was the son of the as-

*Bengt Strömgren (1908-1987).
Nineteenth President of the Society
(1969-1976).*



tronomer Elis Strömgren and had grown up at the Copenhagen Observatory as the infant phenomenon of Danish science, publishing his first paper in the *Astronomische Nachrichten* at the age of fifteen, and obtaining his doctorate when he was only twenty-one. In the 1930s he had become one of the leading astrophysicists of the world, and in 1950 he had left Denmark in order to find better research conditions as Director of the great Yerkes and McDonald Observatories, and later as professor at the Princeton Institute of Advanced Studies. Eagerly awaited by a whole school of young astronomers, he returned to Denmark in 1967 to a specially created chair at the University, residing for the rest of his life at the Honorary Residence at Carlsberg. It fell to him as President to clarify the relations between the Society and the new Research Councils, as we shall see further on. That he was also able to fill the strenuous position of President of the International Astronomical Union 1970-1973 without in any way neglecting the Society was a testimony to his great capacity for work, which also enabled him to pursue his research throughout his period of office. In connection with his calm and amiable personality this made him a highly respected and much loved President.

In April 1975 B. Strömgren was succeeded by Poul Jørgen Riis (b. 1910, elected 1953), who had been Editor since 1970. He was now the senior Danish classical archaeologist, who had taken part in the excavations of Håma before becoming the first professor of classical



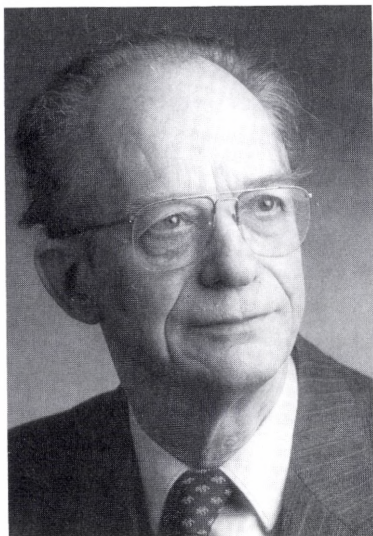
*Poul Jørgen Riis (b. 1910).
Twentieth President of
the Society (1976-1981).*

archaeology at Aarhus in 1940. Moving to a similar position in Copenhagen in 1956, he was from 1958 to 1963 director of the important excavations in ancient Phoenicia which were sponsored by the Carlsberg Foundation, and the reports of which he has since published under the auspices of the Society in a long series of large tomes. Etruscan studies have also profited from his industry and experience.

P. J. Riis's presidency was a period of renewal on many fronts. On the international scene the Society entered upon a great many new research projects organized by the UAI, and at home it inaugurated a new form of external activity with regular courses of public lectures. This was made possible by a thorough revision of the Statutes, prepared by a commission headed by the botanist and former diplomat Gunnar Seidenfaden (b. 1908, elected 1974), and adopted 1976 December 12. Here the purpose of the Society was described in more detail than before as being

to strengthen the position of science and scholarship in Denmark, in particular fundamental research, and to further interdisciplinary understanding. This is especially achieved by holding meetings, publishing writings, participating in international collaboration, and by consultative activity [§ 1].

Of special importance were the new rules about the number and election of members, to which we shall return below. But perhaps the most



Jens Lindhard (b. 1922). Twenty-first President of the Society (1981-1988).

conspicuous change was the introduction of a statutory form of government; the earlier Representation Committee (created in 1931, but never mentioned in the Statutes) was replaced by a "Presidium" comprising the President, the Past President, the Secretary, the Editor, the Treasurer, the chairmen of both the Cash Commission and a new Commission for External Activity in Denmark, and finally two Vice Presidents identical with the chairmen of what was now officially called the Humanistic and the Scientific classes. Taken as a whole, the revised Statutes reflected a rejuvenated spirit among the members, and a common desire to improve both the public image and the routine of the ordinary business of the Society.

When P.J. Riis resigned in 1981 he was succeeded by the physicist Jens Lindhard (b. 1922, elected 1962), who was the first professor at the University of Aarhus to occupy the chair of the Society. Lindhard had been one of the last close collaborators of Niels Bohr, and was universally recognized as an outstanding theoretical physicist, not least after his discovery in 1964 of the so-called "string effect" (or Lindhard effect), a particular phenomenon that may occur when fast particles graze the surface of a crystal. It was published in the *Mathematical-Physical Communications* (Vol. 34, No 14, 1964) and has found numerous applications in solid state physics and other domains.

If some members thought that the burden of the presidential office

Erik Dal (b. 1922). Twenty-second President of the Society (since 1988).



might be too heavy for a man living far away from the capital and accordingly forced to spend much time on travel, such fears were soon allayed. Actually J. Lindhard took several new and significant initiatives. Thus 1983 May 19 he concluded the annual series of meetings by a speech On the State of the Society, in which all aspects of its activity were subjected to a both critical and constructive analysis [Records 1982/83, 69-74]. It was also he who introduced a new series of discussion meetings in order to give more structure to the ongoing debate on matters of policy. They began 1982 February 18 with a debate on "The Conditions of Research", and continued throughout the 1980s, enabling the Society to keep a watchful eye on the increasing number of government initiatives to bring the world of research under control.

With the election in 1988 of Erik Dal (b. 1922, elected 1971) the Society chose for the first time a President with a career outside the Universities. It had taken him from the Royal Library via the Danish School of Librarianship to the Danish Society for Language and Literature, of which he was the director from 1974 to 1991. As a scholar Erik Dal had earned his spurs by organizing the final volumes of the great edition of *Danmarks gamle Folkeviser* (Denmark's Ancient Ballads), which the pioneer folklorist Svend Grundtvig had launched in 1853, becoming a widely known authority on this genre, before establishing himself as a Hans Christian Andersen scholar with a critical edition of the famous

Fairy Tales. Being an authority also on printing and book design, he was the obvious successor to P.J.Riis as Editor in 1975. As such he was responsible for introducing modern printing methods into the publications of the Society [Records 1977/78, 70-74], in close collaboration with the printing house of Bianco Luno, whose services to the Society he described in a highly instructive book called *150 års samarbejde* (150 Years of Collaboration). Other printing companies have also profited from his expert knowledge in this field.

During most of this period Christian Møller continued as Secretary, remaining in office until his death 1980 January 14. Besides continuing his research into the theory of relativity until the very end, he always found time for a meticulous preparation of all matters to be discussed at the meetings, being much loved by the members for his modest and likable personality. In his last years he took an active part in the new public activity of the Society, which celebrated his 20th anniversary as Secretary at an especially festive meeting 1979 November 29 with very personal speeches by the President (P.J.Riis) and C.Møller's friend since their student days B.Strömgen.

C.Møller's successor was the prominent zoophysicologist Ulrik Christian Crone (1926-1990, elected 1968), an international expert on the transport of molecules through biological membranes and capillaries, being also an excellent linguist and very much a man of the world with numerous personal contacts in many countries. Unfortunately his period of office was cut short by failing health that caused him to resign in January 1985. In the following month he was succeeded by the present Secretary Thor A.Bak (b.1929, elected 1965), a chemist with reaction kinematics as his special field and much administrative experience from his period as Rector of Copenhagen University (1972-1976). It was mainly on his initiative that the symposium celebrating the birthday of Queen Margrethe II in 1990 was arranged with the warm approval of the Monarch.

In the last three decades the international relations of the Society have been greatly expanded, especially in the domain of the Union Académique during the presidency of P.J.Riis and with his active support. This has led to Danish participation in a number of projects for which valuable material was preserved in Danish libraries or museums. Among them is the *Corpus Antiquitatum Americanensium*, promoted by the ethnographer Torben Monberg (b.1929, elected 1975), and the *Lexicon Iconographicum Mythologiae Classicae* with Franz Blatt as chairman of the committee, while the participation in the *Sylloge Nummorum Graecorum*

was organised by the wellknown Aarhus expert on ancient numismatics Rudi Thomsen (b. 1918, elected 1967), who also chairs the committee for the *Fontes Historiae Africanae*. The work on the *Atlas Linguarum Europae* was coordinated by the dialectologist Poul Andersen (1901-1985, elected 1969), while the *Répertoire Internationale de la littérature de l'art* was in charge of the librarian Hakon Lund, and the *Jewish Art Index* of the art historian Ulf Haxen. Similarly several new national committees were created for unions under the auspices of ICSU, which in 1964 proposed to move its headquarters from Brussels to Copenhagen, but again abandoned this idea, on which the Danish ICSU committee was not too keen.

New instruments of international collaboration have also appeared on the scene. At a meeting in Stockholm in 1970 it was proposed to establish an International Foundation of Science for promoting research in the countries of the Third World as a supplement to UNESCO. Despite objections aired by the Royal Society of London the new association was set up in 1972 in Paris, and two years later the Society decided to join it, paying the subscription out of its own means, since the government agency for assistance to the Third World (DANIDA) refused its support.

Of a different nature was the European Science Foundation, which was a child of the growing integration of the countries belonging to the EEC. It was proposed at a meeting in Aarhus in 1972 and formally created in Strasbourg in 1974. Being a mixed organisation representing both governmental and non-governmental agencies, it aims at promoting European research in both the humanities and the natural and social sciences. After some preliminary discussions the Society set up a permanent ESF-committee in 1982, in which the Germanist Bengt Algot Sørensen (b. 1927, elected 1978) has since played a leading role. This was but a single example of the increasing cultural activity of the EEC, which in 1972 was joined by Denmark as the only Scandinavian country. On this background there were renewed efforts to preserve and safeguard the close relation between the five Nordic countries in the academic field. A meeting of their learned societies in 1973 in Sigtuna in Sweden resulted in a decision to have annual meetings of representatives of all Nordic academies. This was effectuated in 1976, and the Society has since regularly participated in them.

The general international situation gave rise to a number of special problems of a more political nature that were not easily handled by the Society, whereas many other academies decided to take a more definite

stand, in particular with respect to cases where scholars and scientists were persecuted or denied free travel. Bilateral contacts were here the only possible way. In 1965 and 1966 the Society exchanged delegations with the *Academie Věd* in Czechoslovakia, many members of which were in a difficult situation; but unlike several other academies it remained silent when the “Prague Spring” was crushed by foreign intervention in August 1968 and many colleagues were deprived of their positions. In 1974 the Society arranged a visit to Denmark of a delegation from the *Academia Sinica* in Beijing, and the following year a group of Danish scientists returned the visit. This time the Society came more into the open by publishing a long report in English of the effects of the so-called Cultural Revolution on the situation of science in China.

In a few cases the Society abandoned its traditional reluctance to intervene in foreign affairs, taking measures in favour of individual scientists of international standing. When in 1979 Andrej Sakharov was deprived of his academic status and exiled from Moscow to Gorki, a letter of protest was sent to the Moscow Academy 1980 January 24, mainly on the initiative of Ben Mottelson. This was followed by similar interventions in favour of imprisoned mathematicians such as Victor Brailowski in the USSR (1981) and José Louis Massera in Uruguay (1982), and finally by a telegram in January 1986 sent directly to President Gorbachov in favour of Sakharov, just before his release. On the other hand the Society complied with the policy of the government by not entering any protest when Denmark and Norway in 1987 prohibited not only commercial, but also cultural intercourse with the Republic of South Africa, although this step contradicted the policy of ICSU and similar organisations, with the possible consequence that the two Scandinavian countries might be barred from having international scientific conferences on their territories.

Turning now to more domestic affairs, we notice in this period a number of projects initiated or supported by the Society without the assistance of international organisations. This began in a small way in 1963, when it was invited to elect a member of the board of *Dansk Bilharziøse Laboratorium*, a new research institution set up by an industrial foundation for studying the transmission and possible control of the widespread tropical disease bilharzia. In the following year the Society adopted a new project of its own when four of its members, – the zoologist Christian Overgaard Nielsen (b. 1918, elected 1961), and the geologists A. Noe-Nygaard, Johannes Iversen (1904-1971, elected 1953) and Jørgen Troels-Smith (1916-1991, elected 1961) – proposed that the



Members of the Society with spouses visiting the village of Nordby on an excursion to the island of Samsø in 1986.

Society should acquire a natural preserve for the study of wild life and ecology in Denmark. With the help of the Carlsberg Foundation a large area around Stavns Fjord on the island of Samsø was rented for a period of twenty years, and in 1968 Troels-Smith made the first report to the Society on the progress of the work which has continued here and in several other “research areas” until the present time.

The Humanistic class also took new initiatives when it decided to establish a special Commission for Research in the History of Agricultural Tools and Methods, chaired by Axel Steensberg (b. 1906, elected 1965), who had long been known as a leading scholar in this area. Its very detailed annual reports revealed a high level of activity, underlined in 1979 by an international conference on field structure and tilling held on the premises of the Society. In 1982 a related subject was promoted by a new Commission for Research on the Earliest Agriculture in Denmark and its Contemporary Natural Conditions, headed by J. Troels-Smith and active until his death in 1991. Both commissions have become partners in international undertakings in this interdisciplinary field in which science, history and archaeology are equally involved.

While the Society kept a low profile on the international scene, its

domestic affairs assumed an increased importance, especially from about 1975 onwards, when both its internal life and its relations to Danish society at large underwent significant changes. With regard to the composition of the Society, the resignation of August Krogh in 1949 cast long shadows, and there were frequent complaints that the members of the Society were too few, too unrepresentative, too old, and too exclusively male.

In principle it had been possible to elect women to the Society since 1919, but no change occurred until the presidency of Johannes Pedersen, when the phonetician Eli Fischer-Jørgensen (b. 1911, elected 1968) became the first domestic member belonging to the fair sex. Three years later she was joined by the chemist Bodil Jerslev Lund (b. 1919, elected 1971), and the geologist Tove Birlund (1928-1986, elected 1971), who also became the first woman on the Board of the Carlsberg Foundation. The ice was now broken, and if only a total of thirteen women were elected until 1991, this was no doubt less a consequence of male prejudice than of the lopsided composition of the academic community as a whole.

At the beginning of the period the number of members increased steadily, but at a pace that did not reflect the rapid growth of the academic world, owing among other things to the foundation of a new university at Odense (1966) and so-called university centres at Roskilde (1972) and Aalborg (1974). This intensified the debate on the proper size of the Society, leading to an amendment of the Statutes in 1973 with new maximum figures for the two classes. These were further extended in the Statutes of 1976 which fixed the maximum numbers at 85 and 125 for the Humanistic and Scientific classes respectively, while the number of foreign members was limited to 100 and 180 respectively. In consequence it was possible to elect no less than 18 new domestic members in April 1978, raising the total to 166. Later amendments further increased the figures, which reached a maximum of 215 in 1991. No doubt this number is still too small; but the limited space of the present premises makes it difficult to envisage a further increase.

Another question was whether the Society could be said to represent the whole gamut of Danish science and scholarship. But which was the more important, – to elect members on the basis of their personal academic achievements, or to get representatives of all academic disciplines? The Society has carefully avoided giving a general answer. However, some attempts at an equitable distribution have been made. Thus in consequence of the new statutes the Humanistic class has taken the

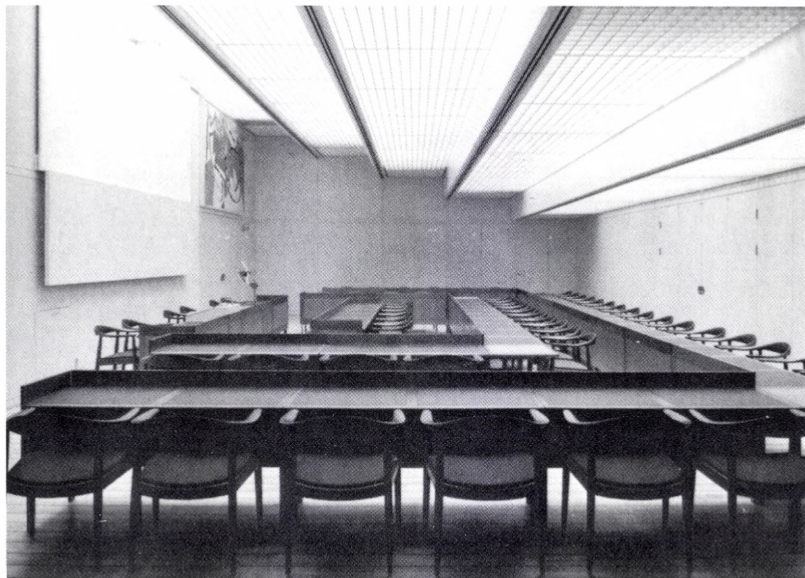
From these data several conclusions can be drawn. Common to the two periods is the fact that the Humanists have never elected a new member under the age of forty, whereas the Scientists have not avoided the younger age groups, the youngest new member being actually 32 years of age.

It seems that the scientists attach greater importance to brilliant achievements obtained at an early age, while scholarly maturity carries more weight with the humanists. A glance at the diagrams shows that this trend has not changed over the years. But it also shows that in both classes the distribution has tended to become more normal in the statistical sense of the word, flattening out to each side of a well-defined top value. In particular the somewhat erratic, but decidedly top-heavy distribution of the Humanistic class in the earlier period has given way to a more regular pattern. This seems to indicate that the composition of the Society has become better adapted to the actual situation of the academic population of the country on both sides of the divide. It is also a reasonable assumption that this development was connected with the fact that the pressure upon the Society diminished to some extent after the extension of the membership that followed in the wake of the Statutes of 1976.

Another important effect of the new Statutes was a practicable solution of the old problem of the public image and impact of the Society. Having listed the traditional activities in the form of meetings, publications, and international projects, the Statutes added a new section stating that

The Society may plan and undertake other external activities in Denmark, for instance by arranging public meetings and lectures, publishing instructive scientific writings, and inviting scholars and scientists to give public lectures and to participate in discussions with colleagues within or outside the circle of members [Statutes 1976, § 17].

To accomplish this new task a permanent Commission for External Activity in Denmark was established in 1976 with two members from each class and the philosopher Mogens Blegvad (b. 1917, elected 1973) as chairman. It began its activity in October 1976 with a series of ten public lectures on "Fundamental Science Today", dealing with topics like the concept of fundamental science, molecular biology, musical and literary science, and the history of science. Being destined for a general public and free of charge, these lectures became an immediate success, the new lecture hall in the old loft of the building being usually filled to



The new Lecture Hall on the top floor of the building adapted in 1976, with furniture arranged for a symposium.

capacity. Under the inspiring direction of M. Blegvad they have continued since with five lectures in the autumn and five others in the spring semester, each series being usually arranged around a general topic. For several years each lecture was separately published in a uniform series of booklets, a practice which unfortunately had to stop in 1979, mainly for financial reasons. However, the public lectures have continued ever since, contributing more than most other undertakings to developing a positive image of the Society, quite apart from their obvious value as popularisation at a high level.

In this connection we must also mention a number of longer or shorter runs of commemorative lectures for which the Society has assumed responsibility. Among them were the J.C. Jacobsen Memorial Lectures, sponsored by the Carlsberg Foundation in memory of its founder. They were delivered from 1977 to 1984, usually by prominent foreign members of the Society from both classes, and published in the relevant series of the Communications. A bi-annual series of lectures on a chemical subject in commemoration of the chemists Niels Bjerrum, J.N. Brønsted and K.U. Linderstrøm-Lang (1896-1959, elected 1935) began in 1983



The new Reading Room and reference library after the restoration of the premises in 1976.

according to the testamentary dispositions of the chemist Aksel Tovborg Jensen (1911-1981, elected 1952), who had left his whole estate to the Society. Of a temporary character was a series of five published lectures commemorating the centenary of Niels Bohr, given in the spring of 1985 and published in the same year in a book entitled *Niels Bohr og den moderne atomfysik* (Niels Bohr and modern atomic physics).

A very different form of external activity was the increasing involvement of the Society in matters of research policy. This was not a new phenomenon since the Society had on more than one occasion been asked to give advice or state its opinions on questions within this field. This form of public service continued during this period; but as time went on, the Society felt increasingly obliged to intervene on its own initiative, although usually provoked by one or another of the many governmental measures that have changed the whole situation of both research and higher education during the last three decades. We cannot go into all the details of this process, but shall mention only some of its principal stages.

In February 1964 the Ministry of Education called a meeting to

discuss a restructuring of research. The Society contributed a memorandum [Blegvad p. 75] stating that the financial means provided by the government were best distributed by the researchers themselves, and that the government needed an advisory board for planning its general research policy. It also proposed the creation of a special fund for financing long-time or large-scale research of kinds that the universities would be reluctant to undertake. The result of this initiative appeared in 1968, when the General Research Foundation of 1951 was dissolved and replaced by five separate "Forskningsråd" (Research Councils) for the humanities, and the natural, medical, social, and agricultural sciences respectively. This was more or less what the Society had envisaged; but it lost its direct influence on the composition of the new Councils, preserving only the right to nominate two members for each of them, one of whom would be appointed by the Minister. A further step towards centralisation was taken in 1972, when the Rask-Ørsted Foundation from 1919 was abolished and its activity transferred to the Research Councils. In the same year a new "Planlægningsråd for Forskningen" (Planning Council for Research) was established as the central advisory body of the government. Of its fifteen members no less than eight were appointed directly by the Ministry, while the Society was asked to nominate two among the other seven.

The relations between the Society and the Research Councils were not clarified until 1973-74, when two joint meetings discussed their mutual relationship. Here the Society was subjected to criticism on a number of points, including the fact that the members were allowed to publish their works in the various series of the Society without having them refereed. This criticism was withdrawn when the Councils were informed about the conditions for being elected to membership. The free meals after the meetings also caused offence, but survived the attack. On the other hand the Society had to yield to the demand that its nomination of members of the national committees for the various international unions was to be approved by the Research Councils.

In the meantime the situation of the universities suffered a dramatic change owing to the increasing dissatisfaction of the non-professional staff with being excluded from all governing bodies, and accelerated by the "revolution" of the student world in 1968. The result was a law which introduced a new and very liberal system of governance by a hierarchy of governing bodies with freely elected representatives of the whole academic staff as well as the students (1970). From 1973 onwards the clerical and technical staff was also represented. Since this innova-

tion was supposed to concern only the "educational" sector of the academic world, the Society could not interfere. However, it was precisely the university situation which caused the Society to begin a long and sustained series of efforts to influence the policy of the Ministry of Education. This happened in the wake of the oil crisis in 1973, which put an end to a prosperous period in which the gross national product had doubled over a little more than a decade.

Owing to the new Research Councils major research projects were no longer financed by grants to the universities, which were left to find means for their ongoing research out of their ordinary annual budgets, which were, as time went on, more and more spent on salaries. In consequence it became increasingly difficult to pursue that fundamental research which was the traditional domain of the universities. This tendency to separate teaching from research found considerable political support, although it was harmful to both these academic areas. The situation was aggravated when the annual grants to the universities were adjusted to the number of students in the individual disciplines, a measure that threatened the very existence of "small" disciplines regardless of their academic importance. In practice it sometimes led to small university institutes being abolished or absorbed by larger ones, and in the 1980s there were a number of cases where "superfluous" academic personnel were just given the sack.

Such was the background of the letter of 1980 December 24 in which the Society warned the government against the effects of its policy, advising the Minister of Education

not to make decisions so rapidly that harmful consequences become too serious. It takes years to create a viable milieu of research, whereas great investments in research may be lost in a few years if the personnel and resources of the institutions are suddenly drastically reduced. Such a weakening must lower the level of research, not least because it is to be feared that the younger are going to be the first to be sacked [Records 1980/81, 55f.].

Two years later the first Discussion Meeting of the Society dealt with "The Conditions of Research" (1982 February 18). One year later the Nordic Academy Meeting took place in Copenhagen. It resulted in a strong recommendation to all the five Ministries of Education not to forget that the clamp-down on the universities might have disastrous consequences for the "small" disciplines which have few students, but

may be of fundamental importance for research in other areas and often play an essential role in the interdisciplinary activity at the

university, strongly marking the profile of its collaboration with other research institutions. This important activity cannot be gauged from the number of students [Records 1983/84, 79].

A climax of this activity was reached in 1984 with two different addresses to the Ministry to which the Society wrote on March 21 that academic personnel ought not to be dismissed in order to save money unless after an evaluation of the institutes, research teams, and individual researchers concerned, adding that

The Society is prepared to give advice in this connection, both with respect to priorities of possible areas of reduction and procedures of evaluation, but in particular with respect to the engaging of foreign experts for the necessary evaluation committees [Records 1984/85, 80].

On May 18 this was followed by another letter underlining the special problems of the biological disciplines, maintaining the general principle that

the distribution of that part of the university grants which is set aside for research should not be proportional to the amount of teaching, but also reflect an evaluation of the quality and perspectives of the research [ibid, 81].

The strain on the university budgets and the scarcity of vacant positions to be filled had the obvious consequence that it became more difficult and less attractive for bright students to envisage a career in research. Many would prefer jobs in industry, and quite a number of promising young scientists would leave the country to find (usually better paid) employment abroad. This added a new dimension to the debate, when from 1981 onwards the government became aware of the problem, which now became a recurrent topic at the Discussion Meetings.

In this situation the Society was enabled to mount a rescue operation of a most unusual kind. The initiative was due to the physicist Aage Winther (b. 1926, elected 1968), who worked at the Niels Bohr Institute, and the prominent industrialist Haldor Topsøe (b. 1913), who in 1981 discussed the idea of marking the centenary of Niels Bohr in 1985 by providing scholarships for a number of promising young scientists whom the scarcity of research jobs had left out in the cold. A private committee for this purpose collected a total amount of kr. 12,000,000 from a number of industrial companies and some of the major banks. Its proposal that the Society might administer the project was adopted at a meeting 1982 April 15 and publicly announced at a press conference on the

following day. Six members were elected to a steering committee, headed by the President (J. Lindhard), and two other committees were formed to select the recipients of the scholarships in the biological-geological and mathematical-physical domains respectively. That this initiative answered a real need appears from the fact that there were no less than about 130 applicants, out of whom sixteen were selected [Records 1982/83, 81]. Together they represented the disciplines of mathematics, physics, chemistry, astronomy, geology, petrology, physiology and biochemistry.

The new fellows began their work in October 1982, receiving annual grants corresponding to the salaries of university lecturers, with a supplement for acquiring scientific equipment and for travel expenses. The steering committee arranged frequent meetings, at which each fellow had to report to the whole group on the nature and progress of his or her work. The scientific output of the whole operation was a total of 196 published papers, including 16 which appeared on the occasion of the Bohr Centenary in 1985 as *Sixteen Research Reports by the Niels Bohr Fellows of The Royal Danish Academy of Sciences and Letters* in the *Mathematical-Physical Communications* (Vol. 41) and the *Biological Writings* (Vol. 25) respectively. A few of the fellows had left before that date, having obtained positions within the established research system, with the result that other fellowships could be prolonged, so that the whole affair was not wound up until two years later. In the end all the participants found occupation in relevant academic jobs, although not always of a permanent nature.

The establishment of the Niels Bohr Fellowships was without precedent in the history of the Society, and was in itself an unmitigated success which made a considerable contribution to relieving one of the plights of the scientific community. On the other hand it was a one-sided operation since it did not affect the situation in the humanities, where young scholars were in an even more difficult position. In consequence the Humanistic class discussed the possibility of a similar action; but this idea was soon abandoned as unrealistic for obvious financial reasons, and all that remained was a pious hope that the Carlsberg Foundation and the Humanistic Research Council might be able to cope with the problem.

In the meantime there were new initiatives under way in the public sphere, on which Tove Birkelund reported at the Discussion Meeting 1983 October 27 in her capacity of former chairman of the Planning Council for Research. It was here disclosed that the Ministry of Educa-

tion was envisaging a considerable number of "supernumerary" university positions of different types, all of them to be filled for a limited period of years.

They included postgraduate scholarships for Ph.D. Students, many temporary positions as university lecturers and "adjuncts" of a lower grade, and finally a small number of well-paid so-called Research Professorships for specially talented people who might be supposed to leave the country, preferably younger people of international status. The first ten research professors were appointed by the Ministry in 1984, all for five-year periods; over the years they have been followed by about thirty others. It is reasonable to suppose that this solution of the problem was influenced by the establishment of the Niels Bohr Fellowships. In consequence the Society described what it had learned from this initiative in a special presentation published in July 1986 as material for a Discussion Meeting 1987 January 8, in which the Minister of Education Bertel Haarder and several other officials took part. Here the views of the Society were presented by the geologist Henning Sørensen (b. 1926, elected 1978), who had played a prominent role in the science policy debate as a whole. He concluded that the measures taken by the government to recruit young researchers had been insufficient, and that more attention should be paid to the needs of the individual disciplines viewed in a national perspective and to the number of highly qualified researchers available, not forgetting the special difficulties of the "small" disciplines [Records 1986/87, 70ff.].

In 1988 a new series of initiatives were launched by what was now called the Ministry of Research and Education. An attempt to change the law of the governance of the universities failed to get through Parliament, while a general reshuffle of the research administration took place in the following years. The number of Research Councils was reduced, the Planning Council for Research replaced by a new Council of Research Policy, and most of the financial means of the previous Research Councils transferred to a new Fundamental Research Foundation, to mention only a few of the more spectacular changes, which were marked by a general tendency to increase the political control over the whole field at the cost of both the universities, the Society, and the professional associations or academies.

This development caused the Society to reconsider its role. The increasing involvement in matters of policy in the previous decades was felt as a novel form of activity, and there were members who thought that the Society was going too far in this direction. However, at a

Discussion Meeting 1990 November 8 a great majority decided to continue to keep watch over the general situation, and to create a special Policy Committee for this purpose. It had two members from the Humanistic and three from the Scientific class, and was almost as a matter of course chaired by Henning Sørensen. Its first task was to undertake a general survey of the research personnel in the whole country, based on a set of detailed questionnaires, of which a very high percentage was returned. A first report on the recruitment problem was ready in April 1992 and published in the following month of August. It was prepared by a sub-committee formed by the biochemist Else Hoffmann (b. 1942, elected 1988) and the physicist Ove Poulsen (b. 1946, elected 1990). It contained a very careful analysis of the age distribution of 1690 members of the academic staffs of the universities of Copenhagen, Aarhus, and Odense, with special attention to problems of mobility, and the situation of women. The general conclusion was that there is both very little mobility and a lopsided age distribution, the effect of which will be serious in ten years' time, unless suitable measures are taken to prevent it by an improved recruitment policy. A second part of the report, analysing the views of both the senior and the junior members of the research community on such questions as the organisation and financing of research, and its actual conditions, appeared in the autumn of 1992. At a time when the whole field seems to be in the melting pot, the two reports represent a precise and highly competent analysis and a respectable contribution to clarifying the dangers and possibilities of the situation.

All through the period considered here the increased activity of the Society, the expansion of the membership, and of course also the ongoing economic inflation resulted in an ever growing strain on its finances, in particular after the onset of the crisis in 1973, a year in which the new Research Councils also showed a noticeable interest in the administration of the means of the Society, as already mentioned earlier in this chapter. This led to the establishment in March 1974 of a special Committee for Improving the Finances of the Society. Various proposals were discussed and again rejected, such as regular support from industrial companies, or statutory subscriptions from the members. In the end the Committee proposed that voluntary contributions from individual members should be collected and administered by a "Medlemmernes Bidragsfond" (The Members' Contribution Fund), whose statutes were approved 1975 May 16 [Records 1974/75, 56-59]. Its purpose was to support the Society and contribute to its continued existence, in partic-

ular with respect to its ordinary meeting activity. Although no member was obliged to pay any subscription, the new fund proved to be a successful innovation and a real asset of the Society. Under the able chairmanship of Gunnar Seidenfaden the contributions rose steadily, reaching in 1989 a total of kr. 123,000, of which kr. 120,000 was put at the disposal of the Society, which in the same year spent kr. 114,000 on the ordinary meetings (apart from travel grants to members from Odense and Aarhus).

The following extracts from the accounts show the development of the movement of the Society's income in the latter half of the period (cf. the corresponding table in Chapter XX p. 303). All amounts are in Danish kroner.

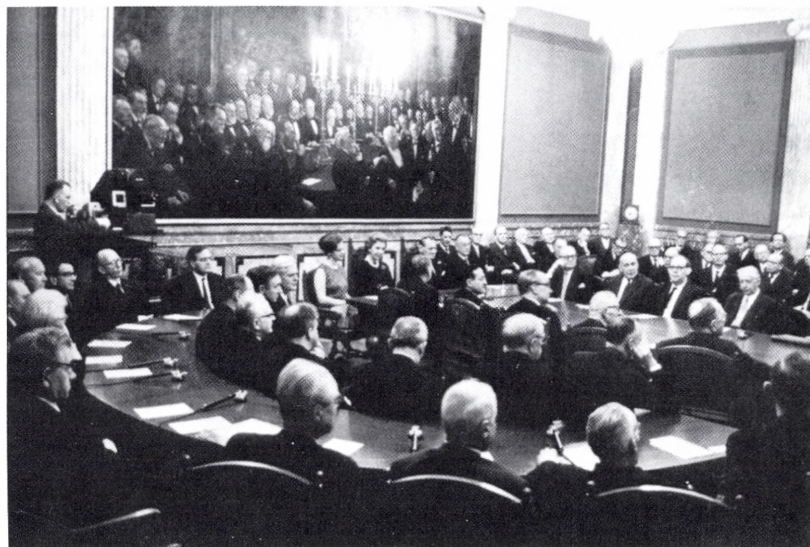
	1976	1985	1990
Interest on capital	63,000	109,000	168,000
Sale of publications	59,000	99,000	154,000
Research Councils	280,000	485,000	539,000
The Government	310,000	542,000	680,000
The Carlsberg Foundation	550,000	1,158,000	1,413,000
Members' Contributions	30,000	85,000	120,000

To these figures should be added a few minor sources of income such as the annual contributions from the Hielmstjerne-Rosenkrone Foundation, by which the Society still profits from the dedication of its first Secretary.

How the income is spent may be briefly illustrated by items from the accounts of 1990.

Production of publications	508,600
International activity	514,500
Public lectures	74,600
Meetings, including travels	215,000
Repairs and acquisitions	380,100
Salaries	1,066,000
Various expenses	586,000

This very condensed survey of the financial state of the Society is only one part of a picture that would be incomplete without an account of the many legacies and other donations which have been entrusted to it, enabling it to come to the support of a great variety of scientific and



A meeting of the Society 1964 April 17. The President Johannes Pedersen is in the Chair at the end of the table. On his right is H. M. King Frederik IX, Queen Ingrid, and Crown Princess Margrethe, now Queen Margrethe II, who was then present for the first time. At the extreme left A. Lomholt standing at the projector.

scholarly purposes. In previous chapters we have already mentioned earlier legacies connected with names like Thott, Classen, Suhr, Ørnborg, and Lorenzen, as well as the honorary residence "Lundehave", which all date from before the Second World War. After the war followed the establishment in 1955 of the important Niels Bohr Foundation, chaired by the President *ex officio*, and of indispensable importance for such undertakings as the establishment of the Niels Bohr Archive and the publications of Bohr's *Collected Works*.

A number of the new legacies were only loosely connected with the Society. This was the case with the F.L. Smith Foundation, created in 1956 by a great industrial company for supporting medical and industrial research, on the board of which the Society was represented by its President. It had a temporary character, stopping its activity in 1982. Other foundations were in the complete care of the Society. Among them was the Legacy of the Professor of forensic medicine Knud A. B. Sand (1887-1968, elected 1927), who left his estate to the Society; it comprised a large villa in North Copenhagen, which has since been used as a free residence for a member, being first inhabited by Einar

Andersen, and from 1988 by the mathematician Gert Kjærgård Pedersen (b. 1940, elected 1977). At present this is the only residence of its kind, "Lundehave" being under liquidation as too costly to maintain.

In the 1980s there was a veritable proliferation of new donations. Of a temporary character was Arne and Doris Truelsen's Legacy, donated in 1982 for supporting fundamental research in astronomy and astrophysics and using its capital on five equal scholarships of kr. 10,000 each in the years 1983-1987. Others were of a permanent nature like the previously mentioned legacy instituted in the same year by A. Tovborg Jensen to support the activity of the Society, in particular by endowing the Bjerrum-Brønsted-Lang memorial lectures and by supplying means for the medals awarded by the Society whose Secretary chairs the board. In the same year the Julie von Müllen Fund (created in 1961) began its activity; it pays for the education of a young woman, and for two annual travel grants to scholars or scientists engaged on definite research projects presupposing a stay in other countries. Also the Caïx Legacy, donated in 1982 by Queen Margrethe II and Prince Henrik, provides travel grants for students of the humanities who work in France for at least three months. In 1984 an important donation was provided by the geophysicist (and Gold Medallist of the Society in 1964) Inge Lehmann (b. 1888) for the support of research in either geophysics (in particular seismology) or experimental psychology, the latter being the subject of her father Alfred Lehmann (1858-1921, elected 1902). In the same year a young member of the Society, the cancer specialist Lennart Olsson (b. 1949, elected 1982), also decided to grant his royalties from the great medical company NOVO to a Fundamental Research Foundation supporting research in all fields of knowledge. Finally in 1986 the Society was asked to appoint the board of the Lillian and Dan Fink's Fund, established by the architect Dan Fink for the purpose of making the results of research and development available, so that scientific achievements can be applied to the economic and cultural life of the country.

The importance of these post-war legacies can be illustrated by the following list of the total grants in 1987.

Fund	Amount in kr.	Fund	Amount in kr.
Niels Bohr	76,000	Inge Lehmann	70,000
Caïx	30,000	J. von Müllen	345,000
A. and D. Truelsen	10,000	Fundamental Research	412,000
Tovborg Jensen	37,500	L. and Dan Fink	127,000

Envoi

It is not the task of the historian to moralize upon the past, nor should he try to foretell the future. However, having followed the vicissitudes of the Society over a quarter of a millennium it is almost impossible not to abandon oneself to at least some reflections of a general nature as a counterweight to the perhaps confusing number of details with which the preceding pages have been crowded.

The Society was a child of the scholarly enthusiasm of Hans Gram and his colleagues and was from the beginning nourished by the benevolent interest of an absolute monarch granting it extraordinary favours, of which not the least remarkable was the exemption from official censorship. Thus it became very much a *Royal Society*, surviving the crisis of the monarchy under a deranged king, and celebrating its first centenary with a highly gifted king in its presidential chair. Nevertheless, the Society was able to read the signs of the times. For even if it was never a hot-bed of revolutionary activity, many of its leading members took a resolute hand in the events through which the absolutistic system of government was replaced by a democratic constitution. But the monarch remained the Patron of the Society, sometimes in a rather distant way, but in between in a close relationship, not least at the present time when the Society enjoys the confidence of an artistic and intellectual Queen who occupies in her own right a notable place in the cultural life of her country.

In the academic community the status of the Society has undergone conspicuous changes. At first it had an unmatched position as the only existing, independent association of scholars and scientists. As such it was entrusted with great projects of national importance, carried out with varying degrees of success, exemplified by the happy completion of the topographical survey, the good luck of the Galathea-expedition or the long agony of the Danish dictionary. This unique position was lost during the nineteenth century, when other academic associations proliferated, while the Society seemed to regard the needs of increasing its membership or publishing its writings in a major language with singular indifference. With inertia as the only driving motive there was now a real danger that institutional anaemia might put the Society to sleep as a small, harmless club of no public importance.

Towards the end of the nineteenth century several factors contributed to awakening the Society from its slumber. A decisive event was the creation of the Carlsberg Foundation. This unique institution provided the Society with its own new and elegant premises, which no doubt helped to create a stronger feeling of identity among its members than they had possessed before. But more than that, – it also instilled in the Society a new sense of responsibility for promoting and supporting research both inside and outside the established academic circles whose narrow confines gradually began to crumble.

This process was clearly discernible around the turn of the century, when Ørsted's limited conception of the Society as primarily an instrument for promoting national values began to give in. Calls from the outside world were heard and followed, and international collaboration was established on an ever growing array of definite projects or more general activities within the world-wide professional unions. The Society is still a Royal *Danish* Society; but it has certainly learned to respect and appreciate the fact that the Republic of Learning and Science has no national frontiers. This salutary insight was behind the conscious efforts of the Society to reconcile the former enemies after the First World War and to heal the scars which the Second had left on the academic community all over the world.

However, while its sense of general and international responsibility has been on the increase, there are other areas where the role of the Society has suffered an indubitable decline. Gone are the days when its Prize Essays were announced year by year, and in many cases resulted in significant contributions from both domestic and foreign sources. Prizes and silver medals are still conferred on young scholars or scientists who have presented a notable piece of research, and the Gold Medal is occasionally bestowed upon senior people outside the Society in recognition of outstanding achievements. Perhaps it was inevitable that the Society should abandon its previous role of defining promising fields of research; but it has meant the loss of initiative and a break with a time-honoured tradition. Whether it can be revived is one of the questions which only the future can answer.

While the Prize Essays have completely disappeared, the role of the publications of the Society has changed in an unmistakable way. On the one hand it was fortunate that the linguistic barriers were removed early in this century, so that both the Writings and the Communications now have potential readers all over the world. On the other hand it has become increasingly difficult to keep them going in the traditional man-

ner. Despite the technological revolution of the printing process as such, the cost of producing printed works has risen dramatically, while the production time has not been correspondingly reduced. This has not prevented the number of academic journals from drastically increasing on a world-wide scale. But as means of rapid communication there is no doubt that they are losing ground to the home-made "pre-print", or even to the telefax or the electronic mail. Although they are not periodicals in the strict sense of the word, the publications of the Society form no exception to this rule.

After the carefree period of stagnation in the previous century the number of the membership has become a recurrent matter of concern in more recent times. It is true that this number has doubled over the last thirty and trebled in the last sixty years. But in the same period the number of universities has risen from one to five, while the total academic personnel of the country has increased from less than two hundred to more than three thousand. The fact that the Society is growing at a much slower pace must at least give some food for thought. Is it a real calamity making it more difficult for it to fulfil its statutory role? and if this is the case, what are the remedies? These are of course non-historical questions which can only be hinted at here. However, they are parts of a much larger and more serious set of questions that must necessarily arise in consequence of the negative aspects of the present situation of the Society, of which a few have just been mentioned. Is the Society still worth its salt? Is there room in modern academic life for a free association of this kind? and is it likely that the investments of work and money in its future existence will pay off? Or were all the benefactors listed at the end of the last chapter mistaken when they left their savings in the hands of the Society in the belief that their donations might help it to prosper also in the days to come?

Once again the historian can provide no answer. Nevertheless, a brief look at both the historical development of the Society in general, and its activity in the last decades in particular, may give at least some indications. In fact, there is a number of trends suggesting that the anxious questions about the future may ultimately be answered in the affirmative. This appears as soon as we consider what the Society is actually doing in order to live up to its purpose, – to promote and support fundamental research in Denmark.

In modern society all kinds of research are dependent on a steady flow of public means. From a democratic point of view this presupposes that the public is informed about how such means are spent and for which

purposes. The Society has taken note of this fact by introducing by statute a new form of external activity. The success of the public lectures has proved that a real need has been met; there are large groups in society who appreciate this form of sober and reliable information, far removed from the sensationalism of the popular "scientific" magazines, and mediated by scholars or scientists who are themselves at the forefront of the research in their respective fields. Certainly the conscious adoption of this mediating role is one of the promising innovations in the life of the Society. For if it does not promote science and scholarship as such, it conveys a salutary and indeed indispensable insight into the special character of fundamental research; and it is a pleasant, – and by no means futile – thought that some future scholar or scientist may have got his first initiation as the guest of the Society at one or another of its public lectures.

This mediating role of the Society is also evident at other levels. The successful result of its appeal to the government in 1951 (leading to the General Research Foundation) was no doubt a result of its traditional, but dormant, feeling of responsibility for the academic wellbeing of the country. But now it was woken to new life as the first of a long series of interventions which once again established the Society as a respected partner in all official debates on research policy. This has led to a somewhat paradoxical situation. On the one hand the direct influence of the Society on these matters has been reduced by political measures which have constantly restricted the right of the Society to appoint members of the various governing bodies. But this has, it seems, been accompanied by an increase of its moral authority. In fact, it remains the only association which can speak in perfect independence, on behalf of the whole community of people engaged on fundamental research. To give voice to the conscience of this community over and above all narrow professional or other sectarian claims is perhaps not the least important role for the Society in the future.

Other activities are less in the public eye, although they are essential elements in the life of the Society. Here its international relations play a prominent role. The exchange of publications with numerous other countries provides a considerable part of the accession of Danish research libraries, which is one reason why the Society is obliged to keep its own publications going. Perhaps even more important is the fact that the Society transacts the business between the international scientific and scholarly unions and their Danish national committees. Many researchers both here and abroad find it highly important that the head-

quarters of all this business should not be a governmental agency (as in many other countries) but a free association of active representatives of the various disciplines.

Another valuable function of the Society is to act as host for academic gatherings of various sorts, a role to which it is well suited in consequence of its well-furnished and convenient premises in the very middle of the capital. Thus other learned societies meet traditionally under its roof. Since the restoration of the building in 1976 it has also been possible to give shelter to an increasing number of specialised symposia arranged by other bodies, or by the Society itself as its own contribution to research in several areas. Until now the crown of this activity has been the six international symposia held in the summer of 1992 as part of the preparations for the 250th anniversary of the Society in November of the same year.

However, the life and soul of the Society are the meetings, which have now been going on for 250 years practically uninterrupted and undeterred by all external changes in the country. From the very beginning until now they have been marked by the fact that the Society is a Society of Science *and* Letters, and that its meetings have always been plenary sessions of both its classes. This is a rather unusual feature in the world of learned societies, and apparently there might be good reasons for abandoning it. Perhaps the scientific level of the communications would rise if the classes met separately, although this is by no means certain. On the other hand there is no doubt whatever that both humanists and scientists can profit by listening to each other and be confirmed in that belief in the ultimate unity of knowledge which it is so important to uphold in a world marked by fragmentation and strife. Of course the concrete value of such interdisciplinary encounters is one of the imponderabilia of academic existence. But it may well be the case that the future prosperity of the Society depends on the continued adherence to this tradition of being together.

Protectors, Presidents and Officers

A. Royal Protectors

1. King Christian VI	1742-1746
2. King Frederik V	1746-1766
3. King Christian VII	1766-1808
4. King Frederik VI	1808-1839
5. King Christian VIII	1839-1848
6. King Frederik VII	1848-1863
7. King Christian IX	1863-1906
8. King Frederik VIII	1906-1912
9. King Christian X	1912-1947
10. King Frederik IX	1947-1972
11. Queen Margrethe II	1972-

B. Presidents of the Society

1. Holstein, Johan Ludvig	1742-1763
2. Thott, Otto	1763-1770
Vacancy	1770-1776
3. Hielmstjerne, Henrik	1776-1780
4. Luxdorff, Bolle Willum	1780-1788
5. Bernstorff, Andreas Peter	1788-1797
6. Schimmelmann, Ernst Heinrich	1797-1831
7. Hauch, Adam Wilhelm	1831-1838
8. Prince/King Christian VIII	1838-1848
9. Ørsted Anders Sandøe	1848-1860
Vacancy	1860-1867
10. Madvig, Johan Nicolai	1867-1886
Vacancy	1886-1888
11. Thomsen, Julius	1888-1909
12. Thomsen, Vilhelm	1909-1927
13. Nørlund, Niels Erik	1928-1933
14. Drachmann, Anders Bjørn	1933-1934
15. Pedersen, Holger	1934-1938
16. Sørensen, S.P.L.	1938-1939
17. Bohr, Niels	1939-1962
18. Pedersen, Johannes	1962-1969
19. Strömngren, Bengt	1969-1975
20. Riis, Poul Jørgen	1975-1982
21. Lindhard, Jens	1982-1988
22. Dal, Erik	1988-

C. Secretaries

1. Henrichsen/Hielmstjerne, Henrik	1742-1776
2. Jacobi, Christian Frederik	1776-1795
3. Abildgaard, Peter Christian	1795-1801
4. Bugge, Thomas	1801-1815
5. Ørsted, Hans Christian	1815-1851
6. Forchhammer, J.G.	1851-1865
7. Steenstrup, Japetus	1865-1878
8. Zeuthen, H.G.	1878-1917
9. Knudsen, Martin	1917-1945
10. Nielsen, Jakob Niels	1945-1959
11. Rasmussen, Ebbe	1959-1959
12. Møller, Christian	1959-1980
13. Crone, Christian	1980-1985
14. Bak, Thor A.	1985-

D. Editors

The Secretary	1742-1815
1. Viborg, E.N.	1815-1822
Vacancy	1822-1826
2. Schouw, J.F.	1826-1852
3. Madvig, J.N.	1852-1867
4. Ussing, J.L.	1867-1886
5. Thomsen, Vilhelm	1886-1901
6. Heiberg, J.L.	1901-1913
7. Andersen, Dines	1914-1939
8. Norvin, Will.	1939-1940
Vacancy	
9. Hammerich, L.L.	1941-1970
10. Riis, P.J.	1970-1975
11. Dal, Erik	1975-1988
12. Hjorth, Poul Lindegård	1988-

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Being only a general survey of the history of the Royal Danish Academy of Sciences and Letters, the present work is not provided with a complete apparatus of notes and references. The following list indicates the printed sources to which references are given in the text.

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Lomholt, A.: *Det Kongelige Danske Videnskabernes Selskab 1742-1942: Samlinger til Selskabets Historie*. Vol. I, København, 1942 (Origins of the Society, its statutes, lists of domestic and foreign members, Presidents, Secretaries, relations with the Carlsberg Foundation). –

Vol. II, København, 1950 (Regular publications, international relations, financial matters, meetings, premises; Index to Vols. I and II).

Vol. III, København, 1960 (Special publications, scientific and scholarly projects, list of Prize Essays).

Vol. IV, København 1961 (The topographical survey 1761-1843, reproductions of the published maps).

Vol. V, København, 1973 (Illustrated calendar of manuscripts in the Archive of the Society).

These *Samlinger* are quoted as “Lomh.” followed by volume (Roman numerals) and page (Arabic numerals).

Molbech, C.: *Det Kongelige Danske Videnskabernes Selskabs Historie i dens første Aarhundrede 1742-1842. Udarbejdet efter Kilderne*, København, 1843 (With a systematically arranged list of papers published in the Writings of the Society until 1842). – Quoted as “Molbech”.

Det Kongelige Danske Videnskabernes Selskab. Oversigt over Selskabets Virksomhed (Appears annually since 1816 as the official records of the transactions of the Society, with summaries in English; commemorative addresses are here published in extenso). – Quoted as “Records”.

The following is a small selection of publications of immediate relevance to the subject.

- Dal, E.: *150 års samarbejde. Videnskabernes Selskabs publikationer 1745 · 1837 · 1987*. København, 1987 (On the long-standing collaboration between the Printing House of Bianco Luno and the Society, with much detailed information on the history of its publications).
- Dal, E.: *Hvad bestiller man i Videnskabernes Selskab?* København, 1989 (A brief account of the activity of the Society today).
- Glamann, K.: *Carlsbergfondet*, København, 1976 (The history of the Carlsberg Foundation in its first hundred years).
- Lomholt, A.: *Det Kongelige Danske Videnskabernes Selskabs Publikationer 1742-1930*, København, 1930 (A complete list of the publications of the Society to 1930, with several later additions to 1973).
- Lomholt, A.: *Lærdomsmosaik*, København, 1967 (A personal account of the history of the Society).
- [Riis, P.J.]: *Det Kongelige Danske Videnskabernes Selskab: Kunstværker og historisk inventar*, København, 1977 (An account of the works of art and historical furniture in the possession of the Society).
- Lomholt, A.: *Et Møde i Videnskabernes Selskab. P. S. Krøyers maleri og dets tilblivelse*, København, 1954 (A detailed analysis of P. S. Krøyer's painting of the Society in 1895, with reproductions of the preliminary portrait sketches of the members).
- The Royal Danish Academy of Sciences and Letters*, Copenhagen, 1981 ("The Little Red Book" contains a very condensed account of the history of the Society, by A. Lomholt, and chapters by various members on its activity throughout the ages in the spheres of scholarship, the exact, biological and earth sciences, and a final chapter on its present day situation).

INDEX OF NAMES

Italics indicate an illustration; names on pp. 326-329 are not indexed.

- Abildgaard, Peter Christian 120-
122, 130, 150, 151, 186, 257
Abrahamson, Werner 197, 198
Adler, Ada 272
Ahl, Johan 98, 101, 103
Amici, G. B. 188
Anchersen, Hans Peter 44
Andersen, Dines 244, 252, 258,
275, 276
Andersen, Einar 181
Andersen, Hans Christian 312
Anderson, Johan 69
Andersen, P. C. 258
Andersen, Poul 314
Andræ, Carl Christopher Georg
179, 181
Aphelen, Hans von 138
Archimedes 247
Arentz, F. C. 80
Aretaeus 263
Armand, Johann Abraham 126,
127
Augustin, J. S. 116

Baar, A. H. v. d. 302
Bacon, Francis 13, 15
Bak, Thor A. 313
Barfoed, Christian Thomsen
222, 227
Barr, Kaj 273, 293
Bartholin, Caspar 22
Bartholin II, Caspar 25, 49, 51
Bartholin, Thomas 22, 73, 76
Behn, Wilhelm 183

Bendz, Henrik Carl Bang 188,
227
Benzelius the Younger, Eric 24
Bernstorff, Andreas Peter 120
Bernstorff, Johan Hartvig Ernst
89, 90, 108, 123, 146, 150
Berthelsen, A. C. 181
Berzelius, J. J. 53
Bille, Steen 183
Birkelund, Tove 317, 325
Birket-Smith, Kaj 278
Bismarck, Otto von 215
Bissen, H. V. 240
Bjerrum, Niels Janniksen 249,
263, 265, 320
Bjørnbo, Axel Anthon 247
Blatt, Franz 274, 292, 307, 313
Blegvad, Mogens 7, 319
Blinkenberg, Christian 252, 253,
258, 265, 272
Bo, Jørgen 305
Boccaccio 14
Bohr, Aage 306
Bohr, Christian 249, 281
Bohr, Harald 280, 282, 289
Bohr, Niels 231, 248, 249, 257,
269, 279-282, 284-288, 291,
294, 296-300, 303, 304, 306,
311, 321, 324, 325, 329
Bopp, Fr. 200
Borchgrevink, J. F. 103
Boyle, Robert 15
Brahe, Tycho 13, 72, 92, 157,
244-246, 306
Brailowski, Victor 315

- Brandt, Enevold 109, 112, 113
 Brandt, P. A. 191
 Brøndsted, Johannes 231, 279,
 289
 Brøndsted, Peter Oluf 171, 202
 Brønsted, J. N. 269, 280, 320
 Bruun, Søren 101, 102, 130, 178
 Brünnich, Morten T. 106, 117,
 120, 121, 124
 Buchwald, Balthazar de 49, 65,
 79
 Bugge, Thomas 53, 62, 84,
 96-98, 100, 101, 103, 115,
 126, 128, 130-132, 146, 147,
 151-153, 156-158, 161, 163,
 164, 166, 168, 176, 181, 186,
 257
 Buhl, Frantz 251
 Bülow, Johan von 47
 Bützow, Ole Nicolai 127
- Canute, King 39, 41, 81
 Caroline Mathilda 109
 Carstens, A. G. 116, 138, 141,
 146
 Casimir, H. G. B. 306
 Celsius, Anders 93
 Celtis, Conrad 14
 Cesi, Federico 14
 Chasles, Michel 233
 Chladni, E. F. 161
 Christensen, Arthur 252, 265
 Christian VI 10, 26, 27, 30, 32,
 38, 41, 63, 65, 67, 108
 Christian VII 65, 108
 Christian VIII 165, 207
 Christian IX 227
 Christian X 282
 Christian Albrecht 21
 Christian Frederik 47
- Christiansen, Christian 248, 257,
 260
 Classen, Johan Frederik 229,
 328
 Clausen, Henrik Nicolai 208,
 210, 222
 Colbert 16, 17, 93
 Colbjørnsen, Christian 154
 Colding, Ludvig August 188,
 191
 Collstrop, Andreas 289
 Cook, J. 102
 Copernicus, Nicolaus 13, 245
 Creswell, K. A. C. 293
 Crone, Christian 313
 Curie, Marie 257
 Curtze, Maximilian 246
 Cuvier, G. 190
- Dal, Erik 312, 312
 Dam, Henrik 280
 Dante 14
 Daugaard, Jacob Brøgger 202
 David, Christian Georg Nathan
 210
 Davies, Rhys 275
 Degen, Carl Ferdinand 178
 Descartes, René 13
 Detharding, Georg 49, 79
 Diels, Herman 262
 Dirac, P. A. M. 282
 Dollond, J. 103
 Drachmann, Anders Bjørn 228,
 256, 265, 267, 272, 274
 Drewsen, Johan Christian 210
 Dreyer, Abraham 66
 Dreyer, J. C. H. 80
 Dreyer, Johan Ludvig Emil 244,
 246, 269
 Ducange, Charles 271

- Dyggve, Ejnar 278, 279
 d'Arrest, Heinrich Louis 216,
 220
 Eberhardt, Henning 128
 Egede, Poul 87
 Egerod, Søren 231
 Eibe, Thyra 247
 Eigtved, Nicolai 58
 Ekström, Johan 98
 Elert, Nicolaj 141, 142
 Engelstoft, Lauritz 160, 164, 194
 Erasmus 22
 Erichsen, Wolja 272, 273, 293
 Erman, Adolf 272
 Erslev, Kristian 228, 253
 Eschricht, Daniel Frederik 212
 Eskil, Archbishop of Lund 81
 Espersen, J. C. S. 247
 Euclid 233, 247
 Fabricius, Johan Christian 82
 Fabricius, Otto 146
 Fenchel, Werner 289
 Fenger, L. 247
 Fenne, Tönnies 302
 Fibiger, Johannes Grib 280
 Fichte, J. G. 159
 Fink, Dan 330
 Finsen, Niels Ryberg 249
 Fischer-Jørgensen, Eli 317
 Folkes, Martin 28, 47, 48
 Forchhammer, Johan Georg 182,
 188, 205, 212, 213, 216
 Foss, Niels 46
 Foucault, Léon 220
 Frank, James 282
 Frederick Wilhelm 19
 Frederick I 19
 Frederick II 19, 73, 105
 Frederik V 66, 67, 70, 108, 110
 Frederik VII 207
 Frederik VIII 47
 Frederik IX 304
 Frederik, Prince 112
 Fremm, Lise 306
 Fridericia, Julius Albert 245
 Friis, F. R. 245, 246
 Friis, Aage 283
 Friis-Johansen, Knud 272
 Galileo Galilei 13, 14
 Gauss, C. F. 180, 186, 187
 George III 109
 Gertz, Martin Clarentius 218
 Geuss, Joachim Michael 126
 Ginge, Andreas 128, 130
 Glamann, Kristof 307
 Goos, August Carl 239
 Gorbachov, M. 315
 Graham, George 98
 Gram, Hans 23, 27-31, 34, 36,
 37, 39, 41, 42, 44-46, 48-51,
 53, 54, 59, 62, 63, 74-76,
 78-82, 85, 87, 106, 135, 136,
 193, 196, 240, 243, 283, 331
 Grimm, Jacob 250
 Grotefend, G. F. 92
 Grotius, Hugo 271
 Grundtvig, Nicolaj Frederik Se-
 verin 197
 Grundtvig, Svend 245, 312
 Grüner, Pia 306
 Grønbech, Kaare 293
 Grønbech, Vilhelm 251, 289
 Guldberg, Ove 112, 119, 120,
 137
 Gunnerus, Johan Ernst 53, 103,
 120
 Gyldendal, Søren 125

- Hahn, Otto, 281
 Hall, C. C. 215
 Halley, Edmund 85
 Hammer, Christopher 66, 80
 Hammer-Jensen, Ingeborg 271
 Hammerich, Louis L. 252, 276,
 283, 293, 294, 296, 302, 304
 Hansen, Emil Christian 224
 Hansen, H. M. 297, 300
 Hansteen, Christopher 186
 Harrison, John 126
 Haslund-Christensen, Henning
 278
 Hatt, Gudmund 279
 Hauch, Adam Wilhelm 63, 152,
 161, 162, 163, 182, 186, 240
 Haven, F. C. von 89
 Haxen, Ulf 314
 Hee, Christen 26, 45, 49, 50,
 52, 79, 85, 95-98, 116, 131
 Heiberg, Johan Ludvig 247,
 262-266, 271
 Heiberg, Ludvig 141, 142
 Heisenberg, Werner 282
 Heldvad, Niels 88
 Hell, Maximilian 103, 104, 127
 Hendriksen, Hans 276, 293
 Henrichsen, Henrik, *see* Hielm-
 stjerne
 Henrik, Prince Consort 306, 330
 Henrik Harpestreng 197
 Henriques, Valdemar 228
 Hertzprung, Ejnar 248, 269
 Hevesy, Georg von 279, 282
 Hielmstjerne, Henrik 27, 28, 29,
 34, 36, 38, 39, 41, 44-49, 52,
 53, 57, 60, 63, 65, 67, 71, 75,
 97, 98, 100, 106, 107, 110-
 116, 122-124, 137-139, 141,
 229, 240
 Hill, Archibald 292
 Hjelmslev, Johannes 228, 252,
 280, 285, 286
 Hjelmslev, Louis 252
 Hoffmann, Else 327
 Hojer, Andreas 28
 Holberg, Ludvig 30, 44, 47, 79,
 81, 82, 85
 Holm, E. 244
 Holm, J. T. 112
 Holm, Jørgen Nicolai 97, 98
 Holm, Peter Edvard 227
 Holmskiold, Theodor 123
 Holstein, Johan Ludvig 27, 28,
 29, 32, 34, 36, 38, 39, 41, 43,
 44, 46, 48-54, 57, 59, 60, 63,
 66, 67, 74, 76, 87, 90, 97,
 98, 103, 107, 108, 116, 135,
 136, 213, 240
 Holstein, Knud 306
 Holten, Carl Valentin 212, 248
 Horrebow, Christian 50, 97,
 100, 103
 Horrebow, Niels 70
 Horrebow, Peder 23, 50, 51, 84,
 95, 97, 157, 164
 Hude, Karl 263
 Humboldt, Alexander von 186
 Hummel, C. G. 182
 Huygens, Chr. 17
 Hvidberg, Flemming 300
 Høeg, Carsten 265, 274, 275,
 286, 292, 293, 297
 Hoegh-Guldberg, *see* Guldberg,
 Ove
 Hoffding, Harald 231, 241
 Haarder, Bertel 326
 Ihre, Johan 144
 Ingholt, Harald 279

- Ingrid, Queen 304
 Iversen, Johannes 315
- Jacobi, Christian Frederik 112,
 114-116, 122-126, 139, 147,
 151, 153, 164
 Jacobsen, Carl 231, 239
 Jacobsen, Jacob Christian 221-
 227, 223, 230-233, 240, 320
 Jacobsen, Thorkild 278, 279
 Jensen, Aksel Tovborg 320, 330
 Jensen, Peter Boysen 249
 Jespersen, Otto 250, 263-265,
 289
 Jessen, Børge 296
 Johannsen, Wilhelm Ludwig
 249, 265
 Johnson, Dr. Samuel 138
 Johnstrup, Johannes Frederik
 182, 183
 Jónsson, Finnur 218
 Joule, J. P. 188
 Juel, Niels 57
 Juliane Marie 112, 113
 Jürgensen, Christian 212, 220
 Jürgensen, Urban 127
- Kant, I. 159, 160
 Kepler, Johannes 13
 Kierkegaard, Søren 206, 256
 Kinch, Karl Frederik 253
 Kingo, Thomas 8
 Kisel, Gottmann Friedrich 75
 Kjeldahl, Johan 224, 249
 Kjær, Hans 278, 279
 Kleve, Terkel 45
 Klopstock, F. G. 123
 Knudsen, Hans 194, 202
 Knudsen, Martin 257, 258, 262,
 263, 265, 269, 276, 288
- Koefoed, Peder 95, 96, 98, 100,
 152, 179
 Kogsbølle, Erhard 227
 Kolderup-Rosenvinge, Lauritz
 Andreas 194, 202
 Kolding, Poul Jensen 133
 Kraft, Jens 50, 51, 82, 84, 85,
 160, 161, 175
 Kratzenstein, G. C. 90, 103, 106,
 124, 126, 127
 Krogh, August 249, 280, 289,
 290, 294, 317
 Kromann, Kristian 206
 Krøyer, Henrik Nikolai 190
 Krøyer, P. S. 240, 286
- Lagrange, J.-L. 104
 Lalande, Jérôme de 102-104
 Lange, Hans Ostenfeld 252,
 260, 264, 272-274, 293
 Langebek, Jacob 28, 36, 45, 46,
 48, 49, 51, 58, 63, 84, 85, 87,
 88, 116, 134-139, 141-143,
 192-194, 196, 239, 283
 Larsen, Ephraim 210, 211
 Lehmann, Alfred 330
 Lehmann, Inge 330
 Leibniz, G. W. 17-19, 105
 Lievog, Rasmus 128
 Linderstrøm-Lang, K. U. 296,
 320
 Lindhard, Jens 311, 311, 324
 Lintrup, Søren 23-25, 29
 Lomholt, Asger 7, 9, 258, 259,
 259, 283, 302, 306
 Longomontanus, C. 157
 Lorenz, Ludvig Valentin 248
 Lorenzen, Marcus 287, 328
 Lous, Christian Carl 117, 126,
 130, 186

- Lund, Bodil Jerslev 317
 Lund, Hakon 314
 Lund, Johan 216
 Lund, Peter Wilhelm 190, 191
 Luno, Bianco 166
 Luxdorff, Bolle Willum 46, 58,
 97, 107, 113, 115, 122-124,
 138
 Löwenørn, Poul von 126, 127,
 130, 178, 186

 Machiavelli, N. 14
 Madvig, Johan Nicolai 143, 210-
 213, 216-219, 219, 221, 222,
 225, 227, 233-235, 246, 255
 Magnússon, Árni 25, 69, 70,
 197, 198, 307, 308
 Magnússon, Finnur 198, 205
 Manton, Irene 257
 Marconi, G. 249
 Margrethe II, Queen of Den-
 mark 7, 306, 313, 330, 331
 Martensen, Hans Lassen 206
 Masius, Hector Gottfried 22, 134
 Massera, José Louis 315
 Maupertuis, P.-L. de 19, 93, 105,
 106
 Maxwell, J. C. 248
 Mayer, Robert 188
 Mazarin, Cardinal 16
 Medici, Lorenzo de' 13, 14
 Meitner, Lise 281
 Mejer, Johannes 92, 93
 Mersenne, Marin 17, 38
 Meyer, Kirstine 247
 Michaelis, J. D. 89, 188
 Molbech, Christian 7, 9, 143,
 171, 173-177, 175, 179, 182,
 192-194, 197, 208, 213, 214,
 216

 Moller, Johannes 39
 Moltke, Adam Gottlob 108
 Monberg, Torben 313
 Monrad, Frederik 26
 Montfaucon, Bernard de 28
 Morville, Niels 101, 102, 119,
 131
 Moth, Matthias 133-135
 Mottelson, Ben 306, 315
 Munch, P. 263
 Munk, Anders 292
 Münter, Fr. C. H. 91, 92, 148,
 203, 205
 Muth, Fr. 95-98
 Müllen, Julie von 330
 Müller, Otto Friedrich 82
 Müller, Peter Erasmus 142
 Müller, Sophus 252
 Mynster, Jakob Peter 174, 208,
 210, 211
 Mynster, O. H. 122
 Møller, Christian 289, 304, 313
 Møller, Jens 171
 Møllmann, Bernhard 44, 67, 81,
 106
 Maaløe, Ole 304

 Neugebauer, Otto 282
 Newcomb, Simon 104
 Newton, Isaac 22, 93, 101, 103,
 161
 Niebuhr, Carsten 90-92
 Nielsen, Christian Overgaard
 315
 Nielsen, Else Løvdal 9
 Nielsen, Einer Steemann 295
 Nielsen, Jakob 288, 289, 296,
 297
 Noe-Nygaard, Arne 286, 289,
 315

- Norden, F. L. 27, 28, 66, 67, 89,
 93
 Nyerup, Rasmus 142, 148, 160,
 192, 196, 198, 199, 203
 Nyrop, Kristoffer 250
 Nørlund, Niels Erik 256, 265,
 269, 284, 285, 294

 Oeder, C. C. 121
 Oehlschlæger, Adam 196, 198
 Olafsson, Eggert 70, 71, 198
 Ólafsson, Jón 144, 198
 Oldenburg, Henry 16
 Olesen, P. E. 258
 Olsson, Lennart 330
 Olufsen, Oluf Christian 176,
 178
 Oribasius 263
 Ostenfeld, Carl Emil 228

 Pálsson, Bjarni 70, 71
 Paludan-Müller, Caspar 253
 Panum, Peter Ludvig 227
 Paris, Gaston 246
 Parker, George 48
 Parthenay, Jean-Blaise Desroches
 de 63, 67
 Pascal, Blaise 13
 Paulus of Aegina 263
 Pechüle, Carl Frederik 245, 246
 Pedersen, Gert Kjærgård 329
 Pedersen, Holger 250, 252, 256
 Pedersen, Johannes 271, 273,
 284, 285, 287, 289, 293, 303,
 304, 306, 307, 308, 317
 Pedersen, Peder 187
 Pedersen, Peder Oluf 248, 269
 Peter the Great 19
 Petersen, Carl S. 247
 Petersen, Vilhelm 239

 Petrarch 14
 Petrus Philomela de Dacia 246
 Picard, Jean 92, 93
 Pihl, Abraham 128
 Pihl, Mogens 285
 Pingel, Peter Christian 190
 Planck, Max 248
 Plato 233
 Pontoppidan, Erik 27, 30, 32,
 33, 36, 39, 44, 81
 Porta, Giambattista della 14
 Poulsen, Frederik 278
 Poulsen, Ove 327
 Poulsen, Valdemar 249, 269
 Ptolemy 247

 Raben, C. F. 52
 Rafn, Carl Gottlob 122, 151
 Rahbek, Knud Lyne 197
 Ramus, Christian 220
 Ramus, Joachim Frederik 45, 48,
 50, 79, 81, 84, 184
 Ramus, Johan Daniel 23
 Rask, Rasmus Kristian 87, 144,
 192, 199, 200, 206, 218, 250,
 252, 275
 Rasmussen, Ebbe 289
 Ravn, Otto Emil 278
 Regiomontanus, Johannes 13
 Rehberg, Poul Brandt 286
 Reinhardt, Johannes Theodor
 183, 190, 191
 Remmers 80
 Reventlow, Christian Ditlev 120
 Rhomaios, K. 278
 Richelieu, Cardinal 16
 Riis, Poul Jørgen 309-311, 310,
 313
 Riisbrigh, Børge 159, 206
 Rink, Hinrich Johannes 183

- Ritter, J. W. 159
 Roedkiær, P. 80
 Roemer, Ole 17, 23, 50, 92, 157,
 245, 247, 285, 286
 Rosencrone, Marcus 229
 Rosenfeld, Leon 304
 Rostgaard, Frederik 46, 134-136,
 139, 141, 143
 Rothmann, Christoph 72
 Rutherford, E. 266
 Ræder, Hans 263, 301
- Sacrobosco, John of 246
 Sainovics, Johan 103, 104
 Sakharov, Andrej 315
 Sand, Knud 329
 Sander-Hansen, K. E. 293
 Sandfeld, Jens Kristian 265
 Savigny, F. K. 202
 Saxo Grammaticus 197, 202,
 246, 274
 Schack-Rathlou, J. O. 113, 115
 Scheidt, Christian Ludwig 44,
 45, 81
 Schimmelmänn, Ernst Heinrich
 150, 151, 161, 240
 Schimmelmänn, Heinrich Carl
 108
 Schiødte, J. C. 212
 Schiöning, Gerhard 53, 116, 138,
 139
 Schjellerup, H. C. F. C. 220
 Schlegel 159
 Schmettau, Samuel von 105
 Schmidt, J. P. J. 258
 Schmidt, Johannes 249, 276,
 278
 Schmidt-Phiseldeck, Conrad
 G. F. E. von 164
 Schopenhauer, Arthur 206
- Schou, Jacob Henrik 229
 Schouw, Joachim Frederik 166,
 174, 184, 192, 208, 210, 212
 Schrödinger, E. 282
 Schumacher, Heinrich Christian
 179-181, 187, 216
 Schwartz, Claudius Clavus 247
 Schönheyder, Fritz 280
 Seidenfaden, Gunnar 310, 328
 Shakespeare, Wm. 135
 Sibbern, Frederik Christian 206
 Smith, Helmer 275, 276
 Sommerfeld, Arnold 280
 Sophia Magdalena 27
 Sporon, Benjamin Georg 142
 Spratt, Thomas 16
 Stampe, Henrik 49, 51, 70, 79,
 80, 110, 113
 Steen, Adolph 212
 Steensberg, Axel 316
 Steenstrup, Johannes 216, 241,
 253
 Steenstrup, Japetus 205, 212,
 216-218, 217, 222, 227, 233,
 234, 241, 253
 Steffens, Henrik 159
 Stender-Petersen, Adolf 258, 302
 Stensen, Niels 22, 73
 Storm, Gustav 220
 Strøm, Hans 85
 Strøm, Ole 138, 139, 141
 Strömngren, Bengt 231, 301, 306,
 308, 309, 309, 313
 Strömngren, Svante Elis 248,
 269, 285, 301, 309
 Struensee, Johan Friedrich 100,
 109-113, 119-121, 137
 Suhm, Peter Frederik 53, 84, 85,
 106, 123, 138, 139, 193
 Suhr, Ole Bernt 235, 328

- Sørensen, Bengt Algot 314
 Sørensen, Henning 326, 327
 Sørensen, Knud 9
 Sørensen, S. P. L. 249, 256

 Tausen, Hans 81
 Tetens, Johan Nicolai 161, 175
 Thalbitzer, William 252
 Thévenot, Melchisédech 17, 38
 Thiele, Thorvald Nicolai 246
 Thomas, Benjamin Bowen 296
 Thompson, Benjamin, Count
 Rumford 48
 Thomsen, Christian Jürgensen
 193, 203, 205
 Thomsen, Julius 234, 235, 236,
 242, 247, 255
 Thomsen, Rudi 314
 Thomsen, Vilhelm 218, 235,
 237, 241, 245, 250-252, 254,
 255, 256, 263, 282
 Thorlacius, Børge Riisbrigh 158
 Thott, Otto 28, 36, 46, 57, 59,
 60, 107, 110, 113, 115, 123,
 127, 141, 229, 328
 Thura, Laurids de 95
 Thury, Cassini de 92
 Tillyard, H. J. W. 275
 Topsøe, Haldor 324
 Trenckner, Carl Wilhelm 275,
 276
 Treschow, Herman 146
 Treschow, Niels 175, 206
 Troels-Smith, Jørgen 315, 316
 Truelsen, A. 330
 Tuscher, Carl Marcus 67
 Tuxen, Poul 276

 Ussing, Johan Louis 218, 227

 Valentiner, Herman 246
 Vedel, Herman 228, 286
 Verner, Karl Adolf 218, 250
 Viborg, Erik Nissen 122
 Volta, A. 159
 Vorländer, Franz 206

 Wallis, John 15, 16, 52
 Warming, Johannes Eugenius
 Bülow (Eugen) 191
 Weber, W. E. 187
 Wegener, Caspar Frederik 210,
 211
 Weigel, E. 19
 Weis-Fogh, Torkel 307
 Weisskopf, Victor 304
 Wellesz, E. 275
 Werlauff, Erich Christian 194
 Wessel, Caspar 102, 131, 178,
 246
 Wessel, Ole 99, 128
 Westergaard, Niels Ludvig 200,
 218, 252, 275
 Wilamowitz-Moellendorff,
 U. von 266
 Wilda, W. E. 202
 William of Ebelholt 36
 Wilster, Peder 97
 Wimmer, Ludvig F. A. 218, 245,
 250
 Winge, Adolf Herluf 191
 Winge, Øjvind 289
 Winterl, J. J. 159
 Winther, Aage 324
 Wolff, C. 49
 Worsaae, Jens Jacob Asmussen
 205
 Wren, Christopher 15
 Wøldike, Marcus 44, 81, 87, 90,
 106

- Zach, A. von 90
Zeuthen, Hieronymus Georg
 220, 233, 234, 243, 244, 246,
 247, 257, 258, 260
Ziegenbalg, Ernst 50
Zoëga, Georg 202
- Ørnborg, F. J. 329
Ørsted, Anders Sandøe 208,
 209, 210-214, 218, 222, 255
Ørsted, Hans Christian 158-164,
 166, 167, 168-182, 184, 186-
 188, 192, 195, 196, 199, 206,
 211, 212, 216, 221, 222, 248,
 263, 281, 332
Østrup, Johannes 252

