

Historic Scientific Instruments in Denmark

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Abstract

Recent years have brought a growing awareness of the importance of historic scientific instruments in the study of history and philosophy of science.

Since the formation in 1977 of the Scientific Instrument Commission of the International Union of the History and Philosophy of Science, an increasing number of scholars have produced studies of many aspects of mathematical and philosophical historical instruments.

One most important aim of the Scientific Instrument Commission, however, was "to stimulate the production of inventories of historic scientific instruments". The establishment of national inventories is now under way in a number of countries, and in this international process the present listing is the Danish contribution.

About 50 collections have been visited and 2447 instruments are recorded and described. The descriptions include for each instrument its location, function, dimensions, material and, when possible, its maker. Relevant indices facilitate the use of the listing for researching scholars. Although the listing will therefore be of immediate use, it will also be a basis for discussions concerning the ultimate form and contents of such inventories. It is, therefore, the first important step towards a Danish national inventory.

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Introduction

This inventory represents the culmination of two years fieldwork, including visits to numerous collections and private sources, and the recording of information about historic scientific instruments. It is a step towards establishing a more complete national inventory which, in turn, will contribute towards the larger concept of a world-wide inventory currently in progress.

The first attempt to organize a worldwide inventory of historic scientific instruments was made in 1956 when, under the auspices of the International Union of the History and Philosophy of Science (IUHPS), together with the sponsorship of UNESCO, the Commission pour l'Inventaire Mondial des Appareils Scientifiques d'Intérêt Historique was set up with the object of promoting such a goal.¹ Belgium was the first to produce a result in 1959, followed by Italy in 1963 and France in 1964. These inventories were very selective, mostly including lists of instruments that had been connected with distinguished scientists. Subsequent inventories have covered a wide range of instrument sources. The lists from Poland and the former Czechoslovakia have not been published, although their content is available on microfiche. The list from the former USSR, by contrast, was published in 1968.

The latest inventories to become available are from Ireland and from the United Kingdom and Eire. These differ widely in presentation, thus indicating that no single approach has yet dictated what should be recorded and how. On the one hand the recently completed compilation for the United Kingdom and Eire,² focuses on instruments to be found in collections, i.e. it does not attempt to duplicate recorded material which might be found in the major museums where such institutions have their own programmes for recording and listing their collections. This inventory has entries which are brief, mostly comprising the instrument name, its maker and a very short description. The Royal Dublin Society Irish inventory, on the other hand, is in the form of a database printout.³ Here each entry is described systematically and in some detail. It is the latter approach which has been the model for the present listing.

During the decades which have elapsed since the first inventories, there has been an increased interest in the subject of historic scientific instruments and their makers. This is nowhere more apparent than through the lively *Bulletin* of the Scientific Instrument Society. This Society was formed in 1983 and now boasts more

¹ For a general historical review, see R.G.W. Anderson, 'National Inventories of Scientific Instruments and the British Contribution' in *Bulletin of the Scientific Instrument Society* 1984 no. 4, p 9-11. See also R.G.W. Anderson and G. L'E. Turner (editors), *An Apparatus of Instruments* published by Scientific Instrument Commission of IUHPS, 1993.

² Mary Holbrook with additions and revisions by R.G.W. Anderson and D.J. Bryden, *Science Preserved*, London, HMSO, 1992.

³ Charles Mollan, *National Inventory of Scientific Instruments in Ireland*, projected publication 1995. See *Bulletin of the Scientific Instrument Society*, no. 39, p 1.

than 550 members. The membership is quite international and is represented by curatorial and professorial members from museums and institutions of higher education and research, as well as private collectors, dealers and lovers of art history. A similar but wider international audience attend the annual symposia of the Scientific Instrument Commission of IUHPS. It is from such meetings that inspiration has been derived for the present undertaking.

A spreading interest in antiques generally has been invaluable to the preservation of that special group of antiques comprising scientific instruments. The survival of old globes, telescopes, microscopes and a miscellany of other artefacts has appealed to collectors for their intrinsic scientific interest and, not least, for aesthetic reasons of beauty and craftsmanship. All this has created an all-out industry in acquisition, restoration and preservation. It is in this way that some old instruments are now preserved which, otherwise, might have been lost forever. It is also in this way that many valuable instruments are now known, rather than remaining hidden in the obscurity of private collections. But, of course, this increased market-interest has inevitably led to increased price tags. Today, one is not surprised at hearing of prices well over £1000 for the simplest of items and even for tens of £1000s for items of special interest.

Inventories of the kind described above, however convenient and useful for scholars and art dealers, are, at the same time, a source of concern for owners of private collections. It has been necessary, therefore, to consider carefully how the itemized entries to private collections should be mentioned in order to respect the wishes of the owners. Sometimes a source is simply referred to as 'private', thus preserving the anonymity of the owner. *Bona fide* persons, however, may usually gain access through the appropriate channels. Fortunately, for the majority of purposes, the notes and illustrations provided here, will be sufficiently adequate without recourse to actually visiting the collection. On the other hand, an inventory provides a valuable reference tool in the detection of stolen items.

As to the entries themselves, the more details that are provided, the greater is the chance that errors will occur. During the course of recording the details on location I have often wondered whether an item recorded as brass was really bronze. Similarly it has sometimes been difficult to decide upon the type of fabrication material, for example, the type of wood is often obscure, particularly when it has been stained and polished over the years. Another difficulty has been in deciding whether an instrument dial was of white metal or silvered brass. The list of pitfalls for the untrained eye, and even the trained eye, is long. Sometimes the question has arisen whether an item should be omitted if the observed information is inconclusive. On the grounds that it is better to record and present data, even if it is to be queried or rejected at a later date, a policy of including uncertain items has been adopted. Naturally, a further difficulty has lain with the need to present the findings in the English tongue.

Prelude

In 1985 Gerard Turner, formerly curator at the Museum of the History of Science, Oxford, and presently professor of the History of Science Group at Imperial College, London University, and Secretary of the Scientific Instrument Commission (IUHPS), visited Denmark to examine the Hauch Collection in Sorø. At that time this collection was being exhibited as an example of a physical cabinet from the Enlightenment period. It was then that he revealed his intention to pursue the old plans of creating national inventories. Through his contact with professor Olaf Pedersen of the Institute of the Exact Sciences at the University of Aarhus the first step was taken toward the origin of the present project. During a later visit, in January 1988, professor Turner again mooted the idea of a Danish national inventory. It was from this time that my own plans began to crystallize. The project received the backing of professor Pedersen, along with the further support of professors Olaf Olsen of the Danish National Museum, Mogens Blegvad of the Royal Danish Academy of Sciences and Letters, and David Favrholt of the University of Odense. Further, on the recommendation of my employer and headmaster at the Sorø Akademi, Erling Kristensen, I was allowed leave from my teaching duties for two years. Donations from the Ministry of Education, the Danish Research Council for the Humanities and from the Lundbeck Foundation in Copenhagen, eventually formed the financial means by which the project was undertaken.

The project began in August 1990 and ran, initially, to August 1992. Bearing in mind that a complete Danish inventory, comprising all known instruments of value for the history of science, could not be completed within this duration, the object was to visit as many relevant collections as possible over the timespan available. The title of the project was then *Registrering af danske instrumenter, som kan have videnskabs-historisk værdi*, which, in translation, is 'Registration of Danish instruments of potential value to the history of science'.

In earlier registrations of this nature it has been the rule that instruments from the 20th century should not be included. This is now regarded as being too restrictive. Obviously it is impossible to register everything made after the advent of mass production. Nevertheless, it is sensible to include typical examples to encourage the preservation of newer instruments, particularly where they form part of collections, as in schools and industry. Such instruments are in great danger of being lost, when they are no longer useful and not yet old enough to be considered as antiques.

Some 30 years ago I worked for one of the world's most important companies making process control instruments. Indeed they had supplied some of the instrumentation for the production of the early atomic bomb. This company, Taylor Instrument Companies of Rochester N Y, no longer exists and their products and catalogues are now difficult to come by. Despite their national importance, the National Museum of American History in Washington possesses only few of Taylor's catalogues; 30 years ago the sales catalogue was at least 10 inches thick. Similarly, one of the important Danish firms supplying navigation, surveying, domestic and

other instruments for more than a century, Cornelius Knudsen of Copenhagen, has been bought by Synoptic A/S, a firm primarily trading in spectacles. I have been informed, that archival material from the older firm, including catalogues and instructions for instruments have been scrapped. Such losses to the history of science and technology are widespread.⁴ Clearly, a national inventory presents a good opportunity for inspiring others to preserve such instruments and catalogues. Encouraging the preservation of written ephemera has been a part of this fieldwork.

Fieldwork

One tempting way of gathering information, although hardly suitable for a project such as this, is to dispatch request forms for information and await a response. Instead, a more rigorous approach has been applied here, namely, that of visiting the various collections and applying judgement *in situ*. These treks have been personally rewarding, particularly when owners have presented hidden or forgotten items from storage shelves or attics. My few discoveries of this nature have convinced me that more is yet to be found for the diligent seeker.

It was the initial intention to register the entries bilingually, i.e. in Danish and English. It soon became clear, however, that this would be both cumbersome and unnecessary, as interested persons in this field usually have a reasonable command of English. The form made for collecting data comprised spaces for an inventory number, the museum or collection name and address, description, reference, maker, signature, box or case, date, material and dimensions, category, condition, photo number and date seen. The size of the form was A4. Generally this plan worked well enough and the prepared sheets became a most essential and convenient tool.

To obtain as broad a view as possible of the amount and types of instrument to expect in Denmark, I have visited a variety of locations: large museums, small museums, schools, private collections. I also contacted a few firms in industry, although with little success. About 60 locations were visited before time ran out. There are still certain major collections which must be included for a fuller national inventory. These are the Nationalmuseet (Copenhagen), a collection of microscopes at the Medicinsk-historisk Museum (Copenhagen), the Teknisk Museum (Elsinore), the Videnskabshistorisk Institut (Steno Museet) (Aarhus), the Ole Rømer Museet (Taastrup). In addition several smaller museums and country houses still await a detailed survey.

⁴ For example, see the comments of R.G.W. Anderson, J. Burnett and B. Gee, *Handlist of Scientific Instrument-Maker's Trade Catalogues, 1600-1914*, Natural Museums of Scotland in association with the Science Museum, Edinburgh, 1990.

Content

Instruments included in this survey may be broadly classed as follows: (a) education and research; (b) industry and trade; (c) domestic (e.g. barometers, toys etc.); and (d) miscellaneous (i.e. items not fitting neatly into any of the above categories, such as typewriters, phonographs etc.).

The collection of psychology instruments at the University of Copenhagen and the magnificent pharmaceutical collection at Bangs Stenhus, Aalborg, have been included. Dentistry and medical surgical instruments, already studied and organized by special interest groups elsewhere, have been omitted. Likewise, musical instruments, unless pertaining to the physics of sound, have been omitted. Clocks and watches, when forming a part of larger collections or where relevant to astronomy and navigation as timekeepers, are included.

This listing contains instruments up to about the mid-20th century, although occasionally a certain subjective judgment has allowed for later instruments, especially when it was thought that they might be of future interest. This has been the case, for example, with Danish-made school instruments where several interesting items were thought to have a certain value in design or usage. Often these are electrical instruments, but also typical early teaching instruments from nuclear physics, for example the cloud chamber, are included. Such items, however, are only included if already in collections. In general, the 'younger' the instrument, the more the restriction that has been placed on its selection.

One difficulty encountered in the course of this survey has been that of naming certain items. For example, the pairs of terms 'air pump' and 'vacuum pump'; or 'Crooke's tube' and 'discharge tube', or 'condenser' and 'capacitor', and so on, are often treated synonymously. The first step in making it possible to retrieve a specific instrument type, is to have available a specific name for that instrument. The large variety of instruments studied will hardly render it possible to cover all types of instrument and obtain absolute conformity. Establishing a thesaurus or dictionary, however, is very important although, as yet, remains unachieved. In this survey, I have tried to follow the nomenclature used in the latest literature, on which there seems to be a fair degree of consensus.

Most descriptions are based on straightforward visual examination. All entries, with very few exceptions, have been photographed and the negatives numbered for reference. Dating has been a major problem. Rather than omit altogether any date for those instruments of which there is uncertainty, I felt obliged to offer an estimate. This is represented in the listing by a (g) (meaning 'guess'). I would of course be happy to learn of any errors that the reader may find.

Selected Danish instruments and makers

Bracketed numbers refer to items in the following listing.

As might be expected, instruments for navigation and surveying constitute large groups. Danish-made navigation instruments are, with few exceptions, compasses and compass accessories. Only a few pre-1850 angle-measuring devices have been located in Denmark. Indeed, it seems that the exemplary work of Tycho Brahe did not inspire others to further instrument making in Denmark, and sadly nothing is left of Tycho's own collection. However, a few compasses from the 17th century, with dry card in wooden bowl, displaying the traditional Mediterranean originated ornamentations of wind-allegories, with a *fleur de lys* at North and cross at East, remain.

Iver Jensen Borger [101, 210], one of the most important compass makers in the 18th century, was licenced in Copenhagen in 1755. He left the business to his son-in-law **Iohan Philip Weilbach**, in 1799, who gave the name to the company. Under the title **Iver C. Weilbach & Co** this company still exists in Copenhagen as the most important supplier of marine equipment, and it is still managed by descendants of the founder.

The previously mentioned firm of **Cornelius Knudsen** made and imported a large number of accessory instruments to the marine compass. These were bearing dials [188], azimuth circles [408], mirrors [189], deflectors [1903] etc. This company was started in 1838 and became a leading instrument trading house in Denmark in the 20th century with an excellent reputation both as manufacturer and agent for foreign firms. Apart from marine instruments, they supplied a great variety of instruments.

The collection of levels, theodolites etc. at Aalborg Universitets Center displays goods by **O.Sundby** [1746] and **Th. Læssøe Müller** [1819], both of Copenhagen, and both well-reputed makers from the end of 19th century.

Frederik Gottlieb Edvard Jünger (1823-99)⁵ was mathematically gifted and interested in mechanics. After a year at the Polytechnical University at Copenhagen he visited Munich during 1849-51, where a number of workshops, having emerged after Reichenbach, Utzschneider and Fraunhofer, were attracting Danish craftsmen interested in optics. He became a prominent maker of surveying levels and theodolites. Also extant is a beautiful and rather unique electromagnetic letter telegraph [2223] based on Wheatstone's invention of 1837. Jünger is prominent for the high quality of his products; his telescopes, dipneedles, barometers, rules and alidades are all of a quality that measures up with the best from abroad. Most impressive is the transit instrument [1180] made for the Copenhagen observatory in 1872.

⁵ Franz-Adrian Dreier, 'Frederik Gottlieb Edvard Jünger. Universitätsmechanicus und Kgl. Hof-Instrumentenmacher in Kopenhagen' in *Reihe Kunst in Hessen und am Mittelrhein*, Heft 22, 1982.

From 1865 to 1867 Jünger shared an address with **Julius Nissen** (1817-67), who also was a prominent instrument maker, but with a different line of product. An air pump had won him an award at the Great Exhibition of 1851 in London. Many hydrometers (alcoholmeters) and other glass instruments show that he was particularly proficient in glass blowing. He also made a gyroscope set which can still be found in schools and universities, unfortunately rarely complete. It was inspired by Foucault's invention of 1852 and had the purpose of demonstrating the movements of the Earth. Joh. Gottl. Bohnenberger (1765-1831) had already, in 1817, experimented with a sphere, suspended in gimbals [1015], but Foucault substituted the sphere with a flat disc. Later it became a popular toy. Nissen was also a retailer of foreign instruments such as Brewster's stereoscope.

Christopher Peter Jürgensen (1838-1911) had been apprenticed by Julius Nissen and worked together with Jünger, whose business he took over in 1867. He made, together with **H.R. Malling Hansen** (1835-90), the world's first typewriter in 1869 [737, 2014]. He also made an electromagnetic tuning fork, invented by the Danish physicist **Paul la Cour** (1846-1908) [1450], and took part in experiments on electric telegraphy based on the phonic wheel [1451] at the beginning of the 1870s.

Another line of Danish instrument making begins in Silkegade, a lane at the centre of Copenhagen. Here was the shop of the ivory turner **Lorenz Spengler** (1720-1807)⁶ during the latter half of the 18th century. Two amber burning glasses made by him are extant [76, 77], and so is an ivory and tortoise shell microscope which was sold at auction a few years ago to a foreign buyer. The shop in Silkegade was taken over by **Jeppe Smith** (1759-1821) in 1808. He seems to have been a most energetic person and has left us with a most diversified collection of instruments from the beginning of 19th century. The spherometer [793] and hygrometer with wood element [1705] are rather unique specimens.⁷ Smith had a flourishing business and many of his instruments are extant in Denmark, and also found abroad. Undoubtedly there must be even more to be found. He supplied telescopes for the optical telegraph line which was established from Elsinore to South Jutland during the first decade of 19th century [625]. It is very likely that many of the unsigned instruments from that time have been made at Jeppe Smith's workshop.

One of Smith's apprentices was **Frederik Anton Thiele** (1792-1859) who studied in Munich and London. In 1817 he started his own firm which still exists today. He is particularly remembered for the invention of a chondrometer which virtually gave his firm monopoly as supplier of this type of instrument in Denmark for more than a century [2383].

Some of the instruments in the listing cannot readily be referred to a specific

⁶Penelope M. Gouk, 'The Union of Arts and Sciences in the Eighteenth Century, Lorenz Spengler (1720-1807), Artistic Turner and Natural Scientist', in *Annals of Science* 40 (1983) p411-36.

⁷Hemming Andersen, 'Jeppe Smith (1759-1821): A Danish Instrument-Maker', in R.G.W. Anderson, J.A. Bennett, W.F. Ryan (editors) *Making Instruments Count*, Aldershot; Variorum, 1993, p 403-417.

group. The oldest such instrument is the Viking suncompass, of which a fragment has been found in Greenland [481]. Some have questioned the genuineness of this fragment, and others, in particular navigation specialists, find it very plausible, that this has been a navigation aid based on the sun's shadow from a gnomon. As it could be one of the oldest known instruments in our part of the world, it has been included in the listing

Carl von Mandern (1685-1740) was probably a member of a family of artists, whose namesake (1610-70) was a famous portrait painter at the Danish court. The few instruments which we know of today, particularly a surveyor's circle ('Holland circle') [2414], travelling sundial [2233] and drawing instruments [2245], show van Mandern as a very competent instrument maker. He was also a clockmaker and seems to have made test equipment for the weights and measures standards.⁸ Did he learn the trade in Holland, and did he seek the success in Denmark inspired by older members of his family? The craftsmanship demonstrated in his known products suggests that he must have produced more than we know of today. More of van Mandern's instruments are likely to come to light.

Nikolaj Bastholm (1706-1751) is only known for two Culpeper microscopes, now at the Medicinsk-historisk Museum in Copenhagen [1056, 1057]. These display such excellent craftsmanship as to indicate that Bastholm must have been very experienced. We can only hope that more instruments with his signature may turn up in the future.

During the second half of the 18th century an increased activity in instrument making took place, partly brought about by immigrants. **Johannes Ahl** (1729-95) left Sweden in 1762, and was received with open arms by the astronomy faculty at the University of Copenhagen. He made a number of 'Ekström's circles' [1881] which were invented by his teacher in Stockholm Daniel Ekström (1711-55). They were used for the triangulation of Denmark under professor Bugge's supervision. One of his apprentices was **Jesper Bidstrup** (1763-1802), who was expected to take over Ahl's position and for that purpose was sent to London to learn the trade. He attained a remarkable skill, but unfortunately died shortly after the return to Copenhagen. His style was unmistakably English, even to the degree of his products being copies from the best London shops. The mechanical powers apparatus [22] looks very much like the illustration in George Adams' catalogue from 1794; the Culpeper-type microscope [1626] and gregorian telescope [131] are in good condition and show traditional craftsmanship. These instruments are all signed in London. After his return to Copenhagen in 1798 he made some improvements to one of Ahl's circles [1182].

Italian glass blowers came to Denmark by the end of the 18th century. Barometers and thermometers are signed **Lerra** [66], **Molinari** [468], **Simoni**, **Aureggi**, **Bianchi**

⁸J.E.A.Hansen 'Til de danske Tegnebestik's Historie' in *Industriforeningens Tidsskrift* Nr 13, Copenhagen 9 Juli 1886.

or **Cetti** [1668], although Danish names also appear on domestic barometers. Such barometers are seldom dated, although we know that **Antonio Cetti** (1762-1835) came to Denmark in 1797 and set up a glass blowing shop on the Vesterbro in Copenhagen. This area was also the amusement centre of the city, and Cetti became a very enterprising figure in arranging all sorts of public entertainment; his son became an esteemed actor and opera singer. The instruments made by Italian glass-blowers were generally of higher quality than Danish made domestic barometers. The latter were mostly of the cistern type with bulb. The capillary was openly mounted, fastened to a shaped board of cheap wood, and the scale was printed on paper in a standard pattern with Danish text, but often with the title 'BAROMETRUM'. The scale itself is in units of Danish inches, which means that 'change' falls on 29 inches of mercury.

Signatures such as **Höyer** [2388], **Jensen** [382], **Johansen** [2404], **Nielsen** [2392] are found, but many are not signed. All these barometers are very much alike. Clearly, the citizenry of Denmark, as of other European countries in the 19th century, adorned their homes with these instruments.

When, in 1829, H. C. Ørsted founded the Polytechnical University in Copenhagen, he provided a workshop to equip the future engineers with a practical background. This workshop, located at the centre of Copenhagen, became an important nursery for industrialists. It was headed by **Henrik Poulsen** (1794-1863) from 1831 to 1860, and 'Mekanikus Poulsen' was teacher of the aforementioned Jünger and Nissen. The listing includes a few surveying instruments signed by Poulsen [1736, 1739].

A unique instrument coming from one of Poulsen's pupils is a vacuum pump [1073] made by C. Burmeister, who with William Wain, founded a shipyard and motor factory in 1865 which gave its name to the world famous B&W marine diesel engine.

H. C. Ørsted's water compression instrument, which has become internationally known as a piezometer, is found in schools throughout Denmark⁹ [337, 744, 1469, 1778]. It has also been made elsewhere abroad and can be seen in many European museums; the collection of scientific instruments at Harvard University also has one.

The collections at the Polytechnical University contain a number of instruments also devised in their own laboratories and made in the 1940s by **Niels Christian Jensen** (1890-1968), an assistant in the physics laboratories. As teacher of experimental physics he obviously had realized that simple, sturdy and easy to repair measuring instruments were necessary to stand up to the treatment received from students. Such instruments were made in his workshop. The electrical equipment was contained in wooden cases with ebonite mounting plates. Items include resistance

⁹ Described in Kirstine Meyer, *The Scientific Life and Works of H. C. Ørsted*, Copenhagen, 1920, vol I p CXXXVI ff.

boxes and dials, fixed and adjustable capacitors, galvanometers, shunts, induction coils, voltage dividers, etc. Hundreds of such instruments, many of them still functioning, were made.

An outstanding importance in the supply of instruments to the Danish education sector was achieved by **Chr. L. Weitzmann** (1844-1909). His firm was established in 1868 in Hillerød, northwest of Copenhagen, and was for half-a-century the main school supplier. Weitzmann virtually supplied everything for all the experimental sciences. After his death the firm was continued by his sons; later they traded under the name 'Fysik'; later again the firm was taken over by two employees under the name 'Podis', which was eventually bought by Struers Laboratorium. When Struers discontinued the sale of instruments for school physics, Müller & Sørensen took over and are today a major supplier of school physics instruments, mainly as agents for foreign makers.

An example of ingenuity is provided by the cathode ray oscilloscope [1854] made at the Aalborg Katedralskole about 1945. At a time when such equipment was not normally available for grammar schools, the physics teacher managed to obtain a cathode ray tube, and then build the complete instrument which he mounted in a wooden case.

Epilogue

The present listing is by no means a definitive work since the ultimate goal, as stated, is to produce a Danish national inventory of historic scientific instruments. However, the fruits of the two years fieldwork should be made available as a tool for those interested and as a basis for future extension. Indeed, the collection of information must be continued to include those collections not yet finished, and others not yet explored. Apart from some major museums, there are a number of old schools and country houses wherein we can hope to find important instruments.

The richest hunting grounds are the local museums where, through the years, people have brought their old family belongings, believing such to be of public interest. As an example the 'Holland Circle' [2414], given to Kalundborg Museum in 1944 by the heirs of a deceased carpenter, is exhibited as an important instrument, which indeed it is. All local museums receive a flow of such artefacts, and, for want of space and personnel, it is often difficult to filter out the treasures.

To make interesting finds in schools and mansions the search process is more haphazard. As school laboratories are renewed, obsolete instruments are thrown away, except perhaps where single pieces might be exhibited. The only places where there has been a tradition for preserving discarded material seems to be at the two old boarding schools of Herlufsholm and Sorø. As for the old mansions, much valuable material may have been lost during attic clearouts in the process of installing loft insulation. Nevertheless, valuable items are still likely to turn up occasionally from these sources.

Finally, there remains the all-important question of record keeping. It should now be possible to establish a database for historic scientific instruments. Indeed, that was my intention for the present work. But, in the attempt, I was advised so differently by every specialist I consulted that any formal plan was abandoned. In the end all material was recorded in word processable form.

Acknowledgements

All my worries about intrusion during fieldwork, and fears of having to force mental barriers to gain access to collections, quickly vanished. Everywhere I was met with more openness than I could have hoped for, and so I would like to express my gratitude to each and everyone I have visited.

A few, however, have been more than hospitable. My special thanks go to all the staff of Institut for de Eksakte Videnskabers Historie at Aarhus Universitet. I have enjoyed the use of their facilities and their many helpful discussions; their interest in my work has been a great inspiration.

Other help has been obtained in different ways and, in this respect, I wish to thank E. Both (Danmarks tekniske Højskole), P. Aagaard Christiansen (Universitetsbiblioteket), B. Gundestrup (Nationalmuseet), Dr H.C. Hansen (Askov Højskole), J. Hein (Rosenborg), Professor N. Hofman-Bang (Hofmansgave), Dr. I. Katic (Den Kgl Veterinær og Landbohøjskole), Dr J. Koch (Medicinsk-historisk Museum), E. Kring-Lauritsen (Danmarks Meteorologiske Institut), E. Munk-Sørensen and C. Borre (Aalborg Universitets Center), G. Olsen (Herlufsholm), S. Thirslund (Kronborg) and J. Vang-Hansen (Rundetårn).

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Numerical instrument list

Entry composition

- (a) Item number.
- (b) Parenthesis: location code and local number, if any.
- (c) Name of instrument.
- (d) Signature: maker's name, retaining the case of the letters. Quotation marks are used for additional interesting inscriptions/markings and also occasionally to avoid misunderstandings.
- (e) Date: c=circa; (g)=guess/estimate; (fl)=floruit; (inf)=local information; (?)=unclear/uncertain/difficult to read.
- (f) Description. Dimensions: L=length, W=width, H=height, D=depth, Dia=diameter, Rad=radius, followed by measurement in millimetres unless other stated; three-dimensional representation always follows the order LxWxH.
- (g) References, comments.

1 (BANGMUSE 12440). Bearing dial.
Signed on the ring:
C. PLATH HAMBURG
on central plate: "Read Compass bearing on outer circle. Place Ship's Head on true Course. Iver C. Weilbach & Co. Sølv og Svarrer. Copenhagen. Denmark"
Late 19th century (g).
Blackened brass ring Dia240 with central plate 160x160 which can be substituted by other plate. Slit and wire sights.

2 (BANGMUSE). Octant.
Signed on ivory name plate:
PARNELL. LONDON
on trade label: "H.E.HOLST / den Kgl Marines Compasmager...Østergade No 24.
Late 19th century (g).
Ebonized wooden frame Rad250. Ivory scale -20 to 100 in 20 min divisions, vernier to 1 min. Clamp and tangential screw. Four shades for index mirror,

two for horizon. Provision for reverse sighting. Double pinhole sight with shutter. Shaped mahogany box 325x300x100.

3 (BANGMUSE 05-07). Sextant.
Signed below the scale (difficult to read): Hilger & Watts. St...port S...30 / Cornhill London. Maker to the Admiralty.
c1940 (g).
Blackened brass three-clover pattern frame. Rad190 limb L220. Silvered scale -5 to 145 in 10 min divisions. Vernier to 1 sec. Magnifier. Four shades for index and three for horizon mirror. Telescope Dia20 L180. Screw focus, sun filter on eye piece. Shaped mahogany box with green felt lining 280x300x130.

4 (BANGMUSE). Octant.
Signed: A. DU BOIS /
...(Illegible).../ ANTWERP.
c1900 (g).

Ebonized wooden frame. Brass index and fittings. Ivory scale missing. Threads for telescope, which is missing. Shades for horizon and index mirrors. Shaped wooden box.

5 (BANGMUSE). Octant.
Signed on trade label in box:
J.F.LUNDY / adjuster of compasses & nautical instrument maker / Fish Dock Road, Great Grimsby / Residence: 10 TASBURG STREET.

c1860 (g).

Ebonized wooden frame, two vertical struts Rad230, Brass index arm and fittings. Ivory scale and nameplate. Vernier, clamp and tangential screw. Telescope sight Dia20 L85. Four index mirror shades in square brass frames, three horizon shades in round brass frames. Shaped mahogany box.

6 (BANGMUSE 14044). Octant.
Signed on ivory name plate: SPENCER
* BROWNING & Co * LONDON
engraved between 50 and 55 on the scale: SBR

Early 19th century (g).

Ebonized wood. Rad250. Brass index arm and fittings. Ivory scale Rad240, -2 to 107° in 20 min divisions, vernier to 1 min. Clamp and tangential screw. Pencil and note plaque missing. Box, spruce, shaped, 335x315x95.

7 (BANGMUSE 2404). Octant.
Not signed.
Rad360. Mirror and shades missing. Pinhole sight. Ivory scale 0-99. Vernier. Poor condition.

8 (BANGMUSE 2405). Octant.
Signed on the scale between 45 and 50:
SBR

c1800 (g).

Ebonized wooden frame, Rad300. Ivory scale -2 to 100 in 20 min divisions. Vernier to 1 min. Brass index and fittings. Clamp and tangential screw. Inlaid ivory diamonds. Pinhole sight. Shades for index mirror.

9 (BANGMUSE 2429). Octant.

Not signed.

c1840 (g).

Ebonized wooden frame, Rad240. Brass index arm and fittings. Ivory scale -2 to 100 in 20 min divisions, vernier to 1 min. Clamp and tangential screw. Ivory pencil holder and note plaque. Four shades for index and three for horizon mirror. Pinhole sight. Very good condition.

10 (BANGMUSE 05-B9). Compass.

Signed around centre of the card:

W.H.MORALEE / Union Street,
NORTH SHIELDS.

c1860 (g).

Dry. Marine. Oak case 350x350x180 with gimbal mounted brass bowl Dia230. 64 point compass card, black print on white. Fleur de lys at North.

11 (SORØAKAD 1). Measuring tape.

Signed: SOUVENIR AF Fr. MARCUS /
20 Drottninggatan STOCKHOLM /
Längd 1 1/2 Meter / 2 1/2 Alnar /
1 Aln=60cm.

c1900 (g) (The International Metre Convention 1876. The metric system was compulsory in Denmark 1907).

Lacquered linen, black with brown writing. L1500 W17.

12 (SORØAKAD 4). Measures.

Signed:

L.LEVISON JR COPENHAGEN

c1900 (g).

Cardboard case 350x40x8 with nine cardboard rules. There should be 14 according to text on the case. 1:1, 1:8, 1:10, 1:12, 1:16; 1:40, 1:48, 1:64, 1:72 (missing: 1:5, 1:20, 1:25, 1:32, 1:50).

13 (SORØAKAD 5).

Measure. Shoemaker's.

Signed: E.PRESTON & SONS /
BIRMINGHAM

Late 19th century (g).

Boxwood L320 W22 H7. Folding with two flaps each L68 adjustable for heel-to-toe measure. Scales: 0-12 inches Danish, and numbers 1-13 and 1-15 (each number equals 8,3 mm).

14 (SORØAKAD 9). Vernier, model.

Not signed.

c1900 (g).

Black print on lacquered boxwood. 215x110x14. Roof-shaped wood 126x63 sliding in dove-tail groove of base plate.

15 (SORØAKAD 23).

Volume measure.

Not signed.

1904.

Sheet metal cup Dia53 H113 with handle. Four lead seals: (a) three towers (for Copenhagen), (b) 1P (1 Pægl=app 1/2 pint), (c) crowned C5 (King Christian V, Weight and Measures Act, 1684), (d) 1904 (year of certification).

16 (HAUCHCOL 30, AWH A39)

Diagonal machine. Amonton's
(Guillaume Amonton, 1687-1705).

Not signed.

c1800 (g).

Parallelogram of forces demonstration. Two square mahogany frames 314x314 set 10 cm apart. Brass cylinder Dia10 L105 with two guides Dia38 running on the upper horizontal mahogany bars, at the same time winding 2 silk threads with brass bobs. Mahogany turned foot Dia182.

Ref: Hauch, vol 1 p 22, pl. 3 fig. 10.

17 (HAUCHCOL 31, AWH A40).

Diagonal machine. Yelin's demonstration of relative movement.

Not signed.

c1800 (g).

Two square glass plates 165x165x2 in mahogany frames are moved relative to each other. Axle with wheels and crank mounted in brass stirrup. Mahogany turned foot. Overall H330.

Ref: Hauch, vol 1 p 24, pl 4 fig 2.

18 (HAUCHCOL 33, AWH A37).

Diagonal machine. Nollet's demonstration of parallelogram of forces.

Not signed.

c1800 (g).

Wooden board mounted vertically on wooden base. A silk cord is pulling a small sleigh along a pair of brass rails, at the same time raising a brass weight, which then moves diagonally over the vertical board. 535x414x105.

Ref: Nollet (1764) leçon 5, II fig 8.

19 (HAUCHCOL 34, AWH A43).

Percussion board.

Not signed.

c1800 (g).

"Billard" 555x555 with cushions H85, wood covered with green cloth. Four feet, levelling screws. At one corner is a brass mechanism for two horizontal hammers at right angles. Hammer heads (likely ivory) missing.
Ref: Hauch, vol 1 p 26, pl 4 fig 6.

20 (HAUCHCOL 35, AWH A27).

Pump. Vera's hydraulic.

Not signed.

c1800 (g).

Wool cord Dia5 transporting water by adhesion from lower glass jar to upper brass cylindrical housing Dia 150.

Mahogany base 415x345. Mahogany stand and grooved turning wheel with brass crank. Overall H990.

Ref: Hauch, vol 1 p 16. Desaguliers (1744) XXXIV.

21 (HAUCHCOL 40, AWH B56).

Inclined plane.

Not signed.

c1800 (g).

Mahogany 475x105x25. Hinged at the lower end, and adjustable along mahogany arc at the upper end. Mahogany base 590x132x18 with three wooden leveling screws. Brass cylinder Dia42 L90 with axle and stirrup held by two cords over pulleys at top of the inclined plane.

Ref: Hauch, vol 1 p 111 pl 19 fig 8. s'Gravesande (1725) pl X fig 5.

22 (HAUCHCOL 241, AWH B70).

Mechanical powers. Apparatus for demonstration of basic mechanical principles.

Signed: J. Bidstrup fec Londini 1791 (mentioned in letter).

Brass. Adjustable inclined plane, worm

gear, compound balance, set of pulleys. Two brass pillars Dia25-19 H300 on Dia160 base. See item 32.

Ref: Hauch, vol 1 p 118, pl 21 fig 3,4. Compare George Adams catalogue (1794) vol 3 pl 5.

23 (HAUCHCOL 42, AWH B57).

Wedges. Two right-angled triangles.

Not signed.

c1800 (g).

Mahogany 153x66 H25.

24 (HAUCHCOL 44, AWH B59).

Screw. Model.

Not signed.

c1800 (g).

Wooden cylinder Dia49 with cardboard "wedge" 430x120 wrapped around.

Ref: Hauch, vol 1 p 113, pl 20 fig 5. La Fond, vol 1 pl XVI fig 3.

25 (HAUCHCOL 45, AWH B58).

Screw and nut.

Signed: "Schraube"

c1800 (g).

Mahogany. L95 Dia 21.

Ref: Hauch, vol 1 p 113, pl 20 fig 4.

26 (HAUCHCOL 47, AWH-).

Spherometer.

Not signed.

c1825 (g).

Glass plate Dia242 for zeroing in wooden frame. Brass disc Dia127 with silvered scale 0-50, 0.1 divisions. Pitch 14 mm on 24 turns.

Ref: Hauch, vol 1 p 4, pl 1 fig 3.

27 (HAUCHCOL 49, AWH B8).

Archimedian screw. Open.

Not signed.

c1800 (g).

Rotating mahogany cylinder Dia64 L314 has spiral-cut groove in which a ball is carried from bottom to top. Inclination is adjustable by a wooden support resting in teeth cut in the base. The cylinder is rotated by a curved crank. Mahogany base 398x145.
Ref: Hauch, vol 1 p 82, pl 14 fig 7.

28 (HAUCHCOL 50, AWH B7).
Archimedian screw. Mounted in bowl for water.
Not signed.
c1800 (g).

A red-painted sheet-iron tube, Dia10, is wound around a wooden cylinder, Dia60 L250, which can be rotated by a curved crank. The cylinder is mounted on slant in a decagonal sheet-metal bowl, 450x320, red inside, black outside.
Ref: Hauch, vol 1 p 83, pl 14 fig 8.
La Fond, vol 1 pl XVI fig 4.

29 (HAUCHCOL 51, AWH B68).
Worm drive to wheel-and-axle.
Not signed.
c1800 (g).
Brass base Dia121. Brass pillar. Overall H585. Brass frame with a brass cord-winding barrel Dia28 L29. The worm is of steel and turned by a curved crank.
Ref: Hauch, vol 1 p 117.

30 (SORØAKAD 561).
Reflecting circle.
Signed: Pistor & Martins Patent No 5 / BERLIN
Mid 19th century (g).
Brass circle outer Dia265, inner Dia240. Brass telescope Dia20 L150. Scales 0-140, 180-80 (twice). Vernier 0-20 (to 1 min) with magnifier. Oil lamp. One arm has tangent screw and clamp.

Centre mirror 63x20. Two balancing weights of leaded brass. Brass pillar H400 with tribach and three level screws. Overall H 510.

31 (SORØAKAD 554).
Level. Telescopic.
Not signed.

1856 (acquired).
Horizontal silvered scale Dia130, 0-360 in 0.5° divisions. Two verniers, defective. Brass telescope Dia30 L410, rack and pinion focus. Spirit level Dia21 L200 above the tube. Circular base plate with three level screws. Wooden tripod H1250. Wooden box 510x240x160 with leather carrying strap.

32 (HAUCHCOL 52, AWH B70).
Worm drive as windlass.
Brass. Part of "Mechanical powers", item 22, but entered in the local inventory under a separate number.

33 (HAUCHCOL 54, AWH B47).
Windlass. Model.
Not signed.
c1800 (g).
Mahogany. Wheel Dia240 with about 50 pegs as handles along the periphery. Base 350x175. Brass weight. Overall H260.

34 (HAUCHCOL 55, AWH B48).
Tread mill. Model. "Roue a Tambour".
Not signed.
c1800 (g).
Mahogany. Wheel Dia235 L66. Axle Dia17 L235. Supported by mahogany frame.

35 (HAUCHCOL 56, AWH B49).

Windlass. Model.

Not signed.

c1800 (g).

Mahogany. Overall 350x160x140.

36 (HAUCHCOL 57, AWH B50).

Capstan. Model.

Not signed.

c1800 (g).

Mahogany. Base

frame 160x130. H120.

37 (HAUCHCOL 58, AWH B51 B52

B53). Cranes. Three models.

Not signed.

c1800 (g).

Mahogany. Overall H600, 480 and 380.

38 (HAUCHCOL 59, AWH B65).

Gear train.

Not signed.

c1800 (g).

A pulley Dia103 on common axle with pinion Dia30 engaged in gear Dia108 on common axle with pinion Dia30 engaged in gear Dia108 on common axle with pulley Dia20. Bearings in brass frames supported by brass pillar on circular brass base Dia170. Overall H590.

Ref: La Fond, vol 1 pl XVI fig 7. Hauch, vol 1 p 115, pl 20 fig 10.

40 (HAUCHCOL 61, AWH B66).

Jack. Model.

Not signed.

c1800 (g).

A curved crank moves via a reducing gear and a rack-and-pinion the jack 120 mm. The load is kept in check by pawl-and-ratchet. Iron and wood. Max L443.

Ref: Hauch, vol 1 p 116, pl 20 fig 12, 13. G. Turner II, p 80.

41 (HAUCHCOL 32 AWH B24).

Parallelogram of forces.

Not signed.

c1800 (g).

Horizontal circular oxidized brass plate Dia213 supported on brass pillar and foot. The plate is engraved with force lines and parallelograms. Three pulleys to be fastened on the edge to carry loads are missing. Overall H206.

Ref: Van Marum, p 145 fig 25. Hauch, vol 1 p 26, pl 4 fig 8,9,10.

42 (HAUCHCOL 53, AWH B33).

Winch, differential. Model.

Not signed.

c1800 (g).

Brass pulleys Dia95, Dia66, Dia40, Dia26. Brass wheel Dia130 on same axle as the pulleys has handles on the periphery (as ships' steering wheel!). Mounted in mahogany frame 260x190 supported by four mahogany pillars. Overall H500.

Ref: Van Marum, p 139 fig 15. Hauch, vol 1 p 109, pl 19 fig 2.

43 (ROSENBOR Md 1-45) Diptych.

1573 (signature).

78x60. Silver, gilt on the outside. Compass under glass. On outside of the upper leaf: crowned "F". On inside: list of ten locations and latitudes. In lower half: 1573 surrounded by ornamental engraving of a carriage. New string gnomon. Seven hour-lines for different locations. Underside: Eagle in oval field. Hook for locking. Belonged to King Frederik II (1534-88). Transferred from the Kunstkammer 1824.

Ref: Gundestrup II, p 241.

44 (ROSENBOR Md 1-78).

Compass. Dry.

1595 (engraved).

Gilt silver cylindrical box Dia209. Heraldic engravings on the side. The lid seems to depict the astrolabe: Engraved calender along the edge, an eccentric circle with the zodiac, and circles for equator, equinox, capricorn and cancer. An index at the centre. Inside the lid: The Danish coat of arms surrounded by a wreath of leaves carrying an elephant (sign of the highest Danish order). Compass card painted in colour on parchment at the bottom of the box. Compass needle missing. Has belonged to King Christian IV (1577-1648). Transferred from the Kunstkammer 1824.

Ref: Gundestrup II, p 240.

45 (ROSENBOR Md 1-79).

Balance with four nests of weights.

Not signed.

c1600.

Two round silver pans Dia142 suspended by three black-and-white twisted cotton cords held by silver hooks to the balance beam with swan neck ends. Iron beam L385 (scale to scale) and index with ornamental carvings. Each set of silver weights consists of a richly ornamented outer cup in which is inserted smoother, smaller cups. Three sets have a total of eight cups, one set has nine cups.

Ref: Liisberg, p 67.

46 (ROSENBOR Md 1-111).

Sandglass. Set of two, each three min.

Not signed.

1633 (signature).

Mounted between 2 enamelled gold plates held by six pillars. Dimensions

126x65x43. The top and bottom plates show in coloured enamel a rebus including the year 1633 and crowned C4 black on white with red berries and green leaves.

Ref: Liisberg, pl 2. Hein. Gli Strumenti, p 131.

47 (ROSENBOR Md 2-73).

Calender.

"CALENDARIUM AUREUM".

Signed: CALENDARIUM AUREUM /
GESCHRIEBEN DURCH MICH
PETRUS FISCHER IM YAR MDXCI
1591 (signature).

Wooden plate 964x620 with calender painted in various colours and gold. Names of months, positions of the sun in the zodiac, days of each month, moon's phases, times for sunrise and sunset, lengths of days and nights. Holes for marking pegs. The table can be covered by two hinged doors, painted green on the outside.

Ref: Friis, p 72 and 368. Lebech, p 69. Brock, p 13 ff.

48 (ROSENBOR Md 3-97). Almanac.

Signed: ALMANACH Curieux, Pour
l'Année 1647, Epacte 24. De l'Imprimerie de Thomas la Carrière, rue
S.Jacq près S.Yuce...

1647 (signature).

Printed on paper, wound on a spool in a cylinder Dia17 L32 of enamelled gold: coloured flower pattern on white background. At the end of the cylinder is a crank as a forget-me-not in enamelled gold.

Ref: Hein

49 (ROSENBOR Md 6-170).

Planetarium. Ole Rømer's.

Signed: J.Thuret Paris

1682.

Octagonal ebonized case 430 mm across D66. Brass mechanism, front and back. One side showing six planets orbiting the sun. The other side is a fixed planisphere engraved with stars and surrounded by a calendar, indices showing months and days. Mounted on ebonized stand and ormulu fittings. To be adjusted by a key. Overall H1004. Ref: King, p 106 ff. Gli Strumenti, p 106.

50 (ROSENBOR Kg 3-166). Calendar. Not signed.

1638 (painted on the slate).

Rectangular slate with wooden frame and door 615x486. Painted black with golden list. On the slate is painted names of the 12 months with weekdays stated: "S M D W D V S". Inside the door is painted "NOOTA.BEEN" and three times "NOTA___" for notes. Also allegorical paintings: an extinguishing candle, a clay pipe and soap bubbles. On the outside a portrait of King Christian IV and a rebus in a shield-shaped field.

51 (ROSENBOR Md 6-490).

Balance. Equal arm.

Not signed.

1718 (or before, inf).

Two flat brass pans Dia265. Steel beam L476. Index L280 in gallows. Hook for suspension.

52 (ROSENBOR Md 6-522).

Volume measure. "Potte"-measure.

Not signed.

c1700 (inf).

Cylindrical pewter Dia90 H252 with handle and knob to open the lid. On the side: crowned "C5" for King Christian V (1646-99); also two certification

stamps for (a) Povl Lauritzen Krag, and (b) Hans Pedersen Riber.

The Weights and Measures reform 1683, headed by Ole Rømer had 1 Pot = 1/32 cubic foot. (=0.968 litre).

53 (ROSENBOR Md 6-523).

Volume measure. "1/2 Potte"-measure.

Not signed.

c1700 (inf).

Cylindrical pewter Dia75 H180 with lid with handle shaped as two berries. On the side: crowned "C5" with two palm leaves. Also two certification marks for Copenhagen.

54 (ROSENBOR Md 6-524).

Volume measure. "Potte"-measure.

Not signed.

c1683 (g).

Cylindrical bell metal Dia80 H200 with handle but without lid. On the side: crowned "C5" with two palm leaves.

Contains 979 g water corresponding to the weights and measures reform of 1683, according to which the French standard "pinte" (= 2 x 489.5 g) was to be followed. This measure has not been certified, and presumably it is a prototype, which has been presented to the king for approval.

55 (ROSENBOR Md 7-43).

Balance. Probably assay balance.

Not signed.

1718 (or before, first mention in local inventory).

Solid iron beam L470, box end pivots. Gallows and iron index. Two deep brass pans suspended in three braided cords. Iron tripod stand H975. Rectangular box of weights L209, wooden inlay: two stars. The box has contained 10 weights

of which three remain marked: (a) 1 pund Danish original (b) 1/2 pund Danish original (c) 8 Lod orig.
Ref: Pihl, Kap III.

56 (ROSENBOR Ma 7-222).

Calender stick.

Not signed.

1663 (signature).

Silver octagonal cross-section with ball-shaped handle. Engraved under the handle: "Jacobs Staf og Rimstoc". The cross-section diminishes downwards. Richly engraved with calender, monogram: FR.3 and various bon-mots. Presented to King Frederik III in 1663.

Ref: Dike, p 74 and p 334. Lebeck, p 42-43.

57 (ROSENBOR Md 7-231). Ell rule.

Christian V's Danish ell ("Alen").

Signed: M

c1680 (first mentioned in local inventory in 1718).

Ebony with silver inlay L805. The handle: two crowned "C5" in open-work silver. The stick has five silver inlays for indexing. At the end of the rule: a silver plate engraved: "M" with leaves. (The letter M denotes the office of Ole Rømer, in connection with the weight and measures act of 1683). (1 Danish ell = 2 Rhineland feet = 630 mm)

58 (ROSENBOR Md 7-381).

Weights. Eight.

Signed:

crowned "C5" 1684 / ORIGINAL

1684.

10 Lispund, 5 Lispund, 4 Lispund, 2 Lispund, 1 Lispund, 8 Pund, 4 Pund, 2 Pund. Original Rømer prototypes of weight from the weights and measures

act of 1683. 1684 is stated, as the act took effect on Whitsun day 1684, and the weights are made during the winter 1683-84 when Rømer changed the standard "Pund" from 505 g to 499.7 g on the demand of the artillery.

Ref: Pihl, p 52 ff.

59 (ROSENBOR Md 7-382).

Volume measure. Cubic fod.

Not signed.

c1684 (first mentioned in a local inventory 1718).

Metal cube reinforced by iron strips. 1 Rhineland foot on each side (315 mm). The weight and measures act of 1683 stipulated 1 Pund to be 1/62 of the weight of 1 Rhineland cubic foot of water.

60 (ROSENBOR Md 7-383).

Weights. Four.

Not signed.

probably 1684 (Weight and Measures reform).

In wooden box. Inlaid lid. The box has space for ten weights, only four extant:

(a) 1 Pund, (b) 1/2 Pund,

(c) 8 Lod, (d) 4 L 1 Q. (4 Lod 1 Quint).

61 (ROSENBOR Md 10-137).

Sandglasses (set of four), each 15 min.

Not signed.

Mid 19th century (first mentioned 1877).

Wooden stand H300. Eight baluster turned pillars. Each glass in two parts, joined at the necks.

62 (ROSENBOR Md 10-285).

Compass. Dry.

Not signed.

1716 (first mention 1718).

Cylindrical ivory case Dia133, ornamented on the side. The lid has a relief portrait of Tsar Peter the Great. Inside is a relief of a ship at sea. The compass card has eight points, fleur de lys at North, ornament at East, 0-90-0-90°, an inner circle is divided 1-12 twice.

The relief(s) allegedly turned by Czar Peter during his visit to Copenhagen 1716.

63 (ROSENBOR Md 12-193).

Sandglass.

Not signed (probably Danish).

1830 (first mention).

Mounted in silver filigree stand H150 W75. Six pillars with small filigree silver ball finials. Hexagonal top and bottom. Two glass bowls, joined at the points.

64 (ROSENBOR Md 12-195).

Sandglass.

Not signed (probably Danish).

1830 (first mention).

Mounted in silver filigree stand H131 W50. Six pillars with small filigree silver ball finials. Hexagonal top and bottom. Two glass bulbs joined at the necks.

65 (ROSENBOR Md 13-535). Clock.

Signed: "Peder Jensen Nøttestad"

(Norwegian. Made for and purchased by King Christian VI on the occasion of visit to Norway).

1740.

About Dia200 (estimation). Elaborately ornamented silver case with Christian VI monogram. Strikes hours and quarters. Shows date and year. Alarm, set on circular scale 1-12. The face has Roman figures for hours, Arabic for minutes. Year, month and date show in rectangular windows.

66 (ROSENBOR Md 15-154).

Barometer and thermometer.

Wheel type.

Made by Iohannes Lerra, registered barometermaker to the Royal Court 18 Oct 1766 (inf).

1797 (inf).

White and gold painted case H1125, base 350x110, dial Dia200. Allegedly presented to Louise Augusta, Duchess of Augustenborg, sister to King Frederik VI. Scale 26"6 to 28" ("Middel") to 29"6, hand drawn. Thermometer L200. Scale 10-32-110° Fahrenheit, handwritten.

67 (ROSENBOR Md 14-109).

Clock. Travelling.

Not signed.

c1770 (g).

Silver. Richly ornamented with hunting scene. Dia85, H~50. Roman figures for hours, Arab for minutes. Brass key L63. Box of white metal and leather, hinged lid Dia118. According to a paper note, presented by Queen Caroline Mathilde (sister to King George III of England) to her chambermaid Mrs v.d.Lühe on the Queen's departure from Kronborg after her banishment 1772 from Denmark.

68 (ROSENBOR Md 15-140).

Watch. Pocket.

Signed, engr on rear mounting plate:

J.H.Müller Schleswig

c1810 (g).

Circular, dial with hour and minute figures in arabic figures. Spring clock. Regulator at the back. Belonged to King Frederik VI (1768-1839).

69 (ROSENBOR Md 15-179).

Telescope. Refracting.

Not signed.

c1800 (g).

Two-draw. Wooden outer tube with brass fittings. Brass draw tubes. Erecting lens. Exhibited with map, compasses etc having belonged to King Frederik VI.

70 (ROSENBOR Md 15-182).

Pedometer. In watch-like case.

Not signed.

1839 (first mention).

Silvered (probably tombac) Dia77 H27. L116 incl handle. Eye for carrying, which can be pushed in for locking. The front has a pendulum apparently for showing the operation of an inner, heavier pendulum. The back of the case opens to a dial with one pointer and two scales: 60-110 "Skridt i 1 Minut" (i.e. steps per minute) and 12-50 "Tiden til 1 Mil" (time for 1 mile (Danish)). On the face of the instrument is a small dial 1-6, Dia14.

71 (ROSENBOR Md 15-186,

Kg 15-183). Drawing instruments.

Not signed (?).

c1795 (g).

Dividers L132, pencil, drawing pen, protractor. In fitted, leatherbound case 191x170. Label in the lid with text in French. Belonged to King Frederik VI.

72 (ROSENBOR Kg 15-183).

Field pocket book. Containing maps of Scania, Copenhagen with surroundings, North Sealand. Map of Sealand and the island of Moen printed on silk.

Not signed.

c1795 (g).

Used by King Frederik VI during military exercises together with drawing set in item 71.

73 (ROSENBOR Md 16-127).

Telescope. Refracting.

Signed: Plössl in Wien.

(Simon Plössl 1794-1868).

Mid 19th century (g).

Single draw. Gilt brass with tortoise cover. Objective end Dia41, eye piece Dia29, L52-77. Belonged to Queen Caroline Amalie (1796-1881).

74 (ROSENBOR Md 17-45).

Telescope. Refracting.

Signed, on the draw tube: J. Bidstrup.

London.

c1795 (fl).

Four draw. Turned mahogany tube Dia60. Brass draws, push-fit focus. Min L300, fully extended L1075. Push-fit dust cover at objective end.

75 (ROSENBOR Md 17-168). Compass.

Not signed.

Mid 19th century (g).

Brass, glass cover. Dia46. Scale 0-360 in 2° divisions. Main compass points indicated, also deviation (abt 20°). Has belonged to King Frederik VII, (1808-63).

76 (ROSENBOR Md 23-196).

Burning-glass.

Made by: Lorenz Spengler (1720-1807) (inf)

c1770 (g).

Amber in silver frame Dia50 with handle of turned amber attached to the frame by silver collar. Overall L81. The lens is plano-convex and has a power of about 6 diopt. Can still be used, although the amber has darkened.

77 (ROSENBOR Md 23-201).

Burning-glass.

Made by: Lorenz Spengler (inf)

c1770 (g).

Amber. No framing but with amber handle in the shape of an arm and hand, cut in one piece with the lens. Dia40. Overall L80. The spherical surface has a diameter of abt 95 mm

78 (ROSENBOR Md 25-126). Diptych.

Signed: LAK (for Leonhart Andreas Karner, Nuremberg)

1719 (engraved on dial).

Ivory. String gnomon. Compass. Engraved names and latitudes of 30 locations. Dimensions closed: 105x72x16.

79 (ROSENBOR Md 25-127).

Calender. 1667-1695.

Signed: BERNHARDUS TAMMKE
1667.

Indian ink drawing on parchment L835 glued to linen and fixed to two wooden reels.

80 (ROSENBOR Md 25-646).

Sandglasses. Four. 1/4, 1/2, 3/4 and 1 hr. Not signed.

1877 (first mention).

Blown in two parts, joined by putty and cord. Mounted together in wooden stand and numbered 1 to 4. Top and bottom shaped; eight baluster turned wooden pillars. Sand seems alright. L294.

81 (ROSENBOR Md 25-647).

Sandglass. As item 80.

82 (ROSENBOR Md 25-813). Diptych.

Made by: A.Holm (according to Kunstkammer inventory)

c1750 (g).

Gilded and silverplated metal. 260x130x215. Including perpetual almanac and level. Inscribed with crowned monograms of the first 13 Danish kings of the Oldenburg line. From the Kunstkammer. Allegedly presented to King Frederik V (1723-66).

83 (ROSENBOR Md 25-1175).

Telescope. Refracting.

Not signed.

c1840 (g).

One draw. Brass. Tube max Dia43, L45. Eye piece Dia23. Mentioned in connection with King Christian VIII (1786-1848).

84 (ROSENBOR Md 27-17).

Table of distances between abt 40 locations in Denmark at the time of King Christian IV. Parchment on two wooden reels.

c1620 (g).

610x710.

85 (ROSENBOR Md 27-32).

Barometer.

Mentioned in the museum's files, but no further information, except H1270.

86 (ROSENBOR Md 27-33).

Thermometer.

Mentioned in the files, but no further information, except L1210.

87 (ROSENBOR Md 27-34).

Eclipsareon. Ole Rømer's invention.

Signed: J.Thuret Paris

c1680 (inf).

Octagonal wooden case. Brass front and rear plates. Gear mechanism of brass and steel. Shows movements of Moon and Earth and shadow of the

Earth. By turning a key, time is indicated together with these movements. All situations between 1580 and 1780 can be reproduced. Mounted on ebony stand, ornamented with ormolu fittings. The stand is a reproduction from 1988. Overall H670.
Ref: King, p 108 ff.

88 (ROSENBOR Md 33-14).
Telescope. Refracting.
Signed: DOLLOND, LONDON No 357
c1800 (g).
One draw push fit focus. Wooden tube Dia56 L1180 with brass collars. Dust cover at objective, and dust slide at eye piece.

89 (ROSENBOR Md 33-47).
Telescope. Refracting.
Signed, engraved in draw tube: Fra Prof Smiths Etablissement / Kiöbenhavn. Nr 631 Dag og Nat
c1830 (g).
Wooden tube Dia60 L540-650 with brass ends. Brass draw tube. Push fit focus. Objective with dust slide. Huyghen's ocular. Erecting lens.

90 (ROSENBOR Ed 2-80). Clock.
Astronomical. Mechanical.
Signed: ISAAC HABRECHT UHREN-MACHER UND BÜRGERN ZU STRASSBURG 1594
1594.
In the form of a tower. A rotating globe may be a later addition. This is a miniature model of the astronomical clock at Strasbourg Cathedral. Calendar dial, moving figures, carillon, and at the top a cockerell crowing and flapping its wings. H1650.
Ref: King, p 59ff.

91 (ROSENBOR Ed 1-91). Armillary sphere. Clock driven.
Made by Josias Habrecht (inf) 1572.
Geocentric. The clock movement is mounted in cubic house with astronomical dials, and with the sphere above. This has an open structure. Equator and ecliptic with 12 carved symbols. Scale for sidereal time and the moon's phases. Latitude can be adjusted. Allegedly a model of the first clock at the Strasbourg Cathedral. Meridian ring Dia160. Overall H304.
Ref: King, p 77.

92 (SORØAKAD 64). Pulley frame.
Not signed.
c1860 (g).
Wooden base 380x200 and vertical frame H830 with pulley blocks and weights of brass. Three sheave tandem blocks and three movable cascaded single pulleys.

93 (HAUCHCOL 65. AWH B35).
Pulley stand.
Not signed.
c1800 (g).
Mahogany. To demonstrate that a pulley wheel can be considered equivalent to two levers joined at one end in a right angle. It also demonstrates that the length of the cord's contact with the pulleys has no influence on the equilibrium. Wooden base 485x120. Two brass pillars, one supporting a four-spoked brass pulley wheel, the other a brass cross, similar to the spokes of the wheel, and with holes at the spoke ends for attaching cords with weights. Overall H545.

Ref: Hauch, vol 1 p 102; Van Marum, p 138 fig 13.

94 (HAUCHCOL 94, AWH B46).

Cranks with brass axle and handle.

Not signed.

c1800 (g).

The axle has three cranks set at different angles so that three small wooden pistons in glass cylinders are at different stages of operation.

Wooden base 168x51. H147.

Ref: Hauch, vol 1 p 110.

95 (HAUCHCOL 67, AWH B67).

Pedometer. In the form of a watch.

Signed on the dial: SPENCER & PERKINS / LONDON

c1770 (g).

Dia55 D20. Iron shackle L160 for fixing to the thigh. Tombac. Dial Dia42. One large scale: 0-100, two smaller scales: 1-10 marked 100 and 1-12 marked 1000. All figures to be read from the centre.

96 (HAUCHCOL 68, AWH C2).

Conveyor models. Two.

Not signed.

c1800 (g).

(a) Bucket conveyor. 12 small boxes 18x14x12 fastened to tape of fabric, moving over two octagonal pulleys. The top one is rotated by a crank. Wooden base 67x53. H197. (b) 10 small spheres on a chain being pulled through a vertical pipe with a spout at the top, acting as water pump.

Ref: Hauch, vol 1 p 121, pl 22 fig 2, 3.

97 (HAUCHCOL 62, AWH B64).

Bevel wheels.

Not signed.

c1800 (g).

Dia28, four meshing. Mounted on a turned mahogany column H205. Base Dia100.

98 (HAUCHCOL 63, AWH B70).

Pulley frame.

Made by Jesper Bidstrup, London c1791.

Brass. Part of "Mechanical Powers". See item 22.

99 (HAUCHCOL 70a, AWH B4).

Centre of gravity.

Not signed.

c1800 (g).

Two wooden polyhedrons for the determination of centre of gravity. c130x90-x20.

Ref: Hauch, vol 1 p 80, pl 14 fig 1, 2.

100 (BOHLHOLM). Evolution dial.

For use by convoy sailing with sailing ships.

Not signed.

c1800 (g).

Brass dial Dia170 with 64-point compass card, on which a brass index with seven directions can be rotated. Marked directions (translated from Danish) (a) "The wind"; (b) "G The line by the wind * over starboard H"; (c) "I The line by the wind * over backboard K"; (d) "L Perpendiculaire * of the wind M". (The * indicates the centre of the indices). A substitute index is marked: (a) "Vinden". (b) "N Vinkelen til * Ordre de Retraite". (c) "P Vinkelen til * 3^{de} Ordre de Marche". Indices b and c are of steel. Indices L130. All is contained in a mahogany box 216x216.

Ref: Compare Randier p 213: Hurricane dial.

"Søe-Evolutioner eller En Orlogs-Flodes Ordener og Bevægelser..." by Comm-Capt C.F.L.de Fontenay from P.Paul Hostes: "L'Art des Armées Navales", Copenhagen 1743.

101 (BOHLHOLM). Compass card.
Signed: Iver Jensen Borger i Kiöbenhavn
c1755 (g).

32 point, fleur de lys at North, small acanthus ornament at East. Scale 0-90-0-90. The seven main points illustrated in colour by figures symbolizing Sun, Moon and the five then known planets. At the centre is a figure standing at an anchor. The card was used for tell-tale compasses on Danish East India Company's ships. About Dia250.

102 (BOHLHOLM 3740:84).

Bearing dial.

Not signed.

Mid 19th century (g).

Telescope L340, wooden tube Dia40, L340. Two Y-supports mounted on brass index, rotatable on brass dial Dia200, graduated 0-90-0-90 with letters L and H at the two zeros. The brass plate is gimbal mounted, having a heavy wooden knob as counterweight. All is supported by a brass column mounted on a heavy wooden block stand.

103 (BOHLHOLM 3725:84).

Chronoscope.

Signed: No 100 / CHRONOSCOPE
NAVEZ-LEURS / CONSTRUIT PAR
J.JASPAR / A LIÈGE

c1900 (g).

Iron base 277x136x19 with Dia152 semicircular vertical plate scale 0-180 in

0,5° divisions, with two diametrically mounted coils. Overall H117. Use not known.

104 (BOHLHOM 20120/7).

Bearing dial.

Not signed.

Late 19th century (g).

Brass ring Dia248 with silvered scale 0-5400-0 (1/30 divisions); racked edge. Alidade with pinion. Vernier. Telescopic sight Dia30 L320, blackened brass, centrally mounted in stirrup. Cross-hair. Cone for staff mounting.

105 (BOHLHOLM 3723:84).

Electroballistic apparatus.

Signed: APPAREIL ELECTRO-BALLISTIQUE / DU CAP^N NAVEZ / CONSTRUIT PAR / J.JASPAR A LIÈGE.

(Auguste Joseph Antoine Navez (born 1816) invented 1850 the first electroballistic apparatus for measuring projectile speed.)

Late 19th century (g).

Mahogany base 360x330. Vertical brass dial Dia160, with brass pendulum, continued upwards in index arm with vernier against a silvered scale 0-150° with 75° at the middle. At rest the index points at 75°. On the rear two coils, built in brass housing. Cover with five glass panels. Together with no 103 this is part of a system to measure the speed of a cannon ball. Described in: Th.du Moncel: *Exposé des Applications de l'Électricité*, 3^e Edition, Tome Quatrième, Paris.

106 (BOHLHOLM 4160:84).

Range finder.

Not signed.

c1900 (g).

Naval artillery, "Capt Middelboe's Distance Micrometer". Brass. Max Dia82. Eye piece Dia22. Overall L415. Divided lens micrometer to measure the angle between the water line of a target and the horizon. This is directly converted to distance reading on four scales against four heights of the observer above the water. Against a pointer for 12 ft height, distance reads 150 to 1400 ft; for 18 ft height: 150 to 1800 ft; for 24 ft height: 150 to 2600 ft; for 30 ft height: 200 to 3000 ft. Handwritten instructions for use titled "Kaptajn Middelboes Distance Mikrometer", and signed "Chr.G. Middelboe" (Capt, Naval Artillery).

107 (EGESKOV). Barometer. Cistern.

Signed: KJØBENHAVN / Fecit Ioh Lerra

Late 18th century (g).

Wooden base about 85x20 with golden flower ornament pediment. Paper scale 25 6/12 to 30 6/12 with text in Danish and French. Memory pointer. "Ustadigt" (change) at 28. Marked "BAROMETRUM / Torricellianum". Thermometer, red spirit fill; paper scale Fahrenheit and Reaumur with German text.

108 (HAUCHCOL 360. AWH A44).

Percussion pendulum.

Mariotte's collision apparatus.

Not signed.

c1800 (g).

Mahogany stand on tripod with three brass levelling screws. From a mahogany bracket is bifilarly suspended seven ivory spheres with diameter about 5 cm, spaced at the same length, and hanging at identical level, so as to colli-

de along the same line. From a brass bracket are suspended two ivory spheres in the same manner. A circular scale measures the swing of the spheres.

Ref: Van Marum, p 172. Hauch, vol 1 p 27, pl 4 fig 11, 12.

109 (HAUCHCOL 75. AWH B5).

Leaning tower at Pisa.

Not signed.

c1800 (g).

Wood. Painted grey.

To be measured.

Ref: Hauch, vol 1 p 82, pl 14.

110 (MARINMAR). Davis Quadrant.

Not signed.

c1750 (g).

Ebonized wooden frame, boxwood arcs. Overall L640. Small arc Rad180 cross section 23x16, scale 0-65° in 1° divisions with stars ornament. Large arc cross section 24x16, scale 65-90° in 0.5° divisions and transversals 1:10 to 3 min. Also scale along the edge 25-0 in 1/12° divisions. Bands of stars as ornamentation. No marking on the reverse. Shades and sights are missing. Nameplate on the long bar: "Hans Dein", presumably the owner.

111 (MARINMAR). Sextant.

Signed: F.L.Klau... (illegible)... Kjøbenhavn

c1860 (g).

Brass and oxidized brass. Limb Rad190, inlaid silvered scale 0-115, vernier 1:20, clamp and tangential screw. Telescopic sight Dia20 L90. Two shades for horizon mirror, three shades for alidade mirror.

112 (MARINMAR). Sextant.

Signed: S.H.CAIL. NEWCASTLE

Mid 19th century (g).

Ebonized wood. Limb Rad240. Ivory scale -2 to 107° in 20 min divisions, vernier to 0.5 min. Clamp and tangential screw. Oxidized brass alidade and bracket for horizon mirror and three alidade mirror shades. Pinhole sight.

113 (MARINMAR). Sextant.

Signed: P.A.Feathers Dundee

c1860 (g).

Oxidized brass. Limb Rad190. Silvered scale -5 to 120° in 15 min divisions; vernier illegible. Clamp and tangential screw. Pinhole sight in telescope tube Dia20 L86. Four alidade mirror shades. Three shades for horizon mirror (defective). Fruitwood handle.

114 (MARINMAR).

Log. Mechanical. Taffrail.

Signed on a fin: (anchor) / T W / CHERUB / WALKER & SON LTD / BIRMINGHAM ENGLAND

Signed on the register: WALKER'S / CHERUB Mark III / Made in England / by Thos Walker & Son Ltd / Birmingham.

c1860 (g).

Brass. Walker's Cherub Mark III. Register Dial Dia80, Three scales 0-100, 0-9 and 0-1000. Rotator L400 with four fins. Stabilizer wheel missing.

115 (JÆGERSPR). Diptych.

Not signed.

c1640 (g).

Ivory. 130x85x25. Hinged in three leaves. The lower opens to reveal a mirror. The top leaf has a lunar volvelle and a wind rose. The string gnomon ad-

justable 42 to 54 deg latitude. Decorations in red, green and black. Foliage and sun/moon faces. Probably made by Thomas Tucher.

116 (JÆGERSPR). Walking stick, hollow, containing utensils, such as pair of compasses, protractor, pencil, pens, ink bottle, map of Denmark, measuring tape, compass, scissors etc, etc.

Not signed.

Mid 19th century.

L900. Belonged to King Frederik VII.

117 (JÆGERSPR). Surveyor's level.

Signed: F.A.Thiele Kiøbenhavn

c1900 (g).

Brass. Rack and pinion focus. Spirit level above. Socket for staff mounting.

118 (JÆGERSPR). Compass. Chinese, geomantic.

Mid 19th century (g).

Brown lacquered. 19 circles with signs. Compass with red line diameter.

119 (private). Sundial.

Signed: CHRISTOFF FROMMÜLLER / ALB / ANNO SALUTIS / MDCXLII ELEVATIS POLI / 56 GRADUS 1642.

Brass. Dia500. Fixed brass style H~100. The base is lead weighted. Lead cover for protection. Engraved in the brass "FALCK GJØE FALCKSON - HELWIG BRAHE / TROPICUS - CAPRICORNI"

120 (ORLOGSMU 2921:83).

Stadimeter.

c1920.

"Fisk-type" measuring the angle to a known height of a ships mast, reading

distance to the ship on a scale calculated as height times cot to this angle.
Ref: Bowditch, p 126.

121 (ORLOGSMU 2566:82).
Davis quadrant.
Signed: Made by GILBERT, TOWER HILL, LONDON.
c1750 (John Gilbert sen 1718-52).
Wood. 640x360. (Entered from the museum's file).

122 (ORLOGSMU 1215:71).
Binnacle lamp.
c1900 (g).
Brass. Turned wooden base. Overall Dia60 H180. (Entered from the museum's file).

123 (ORLOGSMU 2523:82). Compass.
Mariners. Dry.
Signed on the compass card: JACOB DIDERICSEN KJØBENHAVN
Mid 19th century (g).
Wooden bowl suspended in gimbals in wooden case. About 200x200x140. (Entered from the museum's file).

124 (ORLOGSMU 116:58). Quadrant.
Gunter's.
Signed: H.Sutton fecit 1655.
1655.
Brass plate. Engraved in the apex is a shadow square and a list of declinations for six stars. Between this and the periphery is a circular section with almucantars and azimuth lines. The limb is divided 0-90° in 0.5° divisions. For use on London latitude. Sighting pinholes and plumb bob; bead missing.
Allegedly bought in London by the

Danish astronomer Ole Rømer in 1688.
Compare: A. Turner, p 250

125 (ORLOGSMU 1026:1977).
Salinometer.
Signed on data plate: FRIEAKE & SONS, A.P.H.W, London
c1900 (g).
Brass. Dia75 L400. Mounting brackets. Threaded connections and valve with separate handle. Dataplate with thermometer and hydrometer scale.

126 (ORLOGSMU 129:58). Protractor.
Signed: PRINDS GEORG SØOFFICERSKOLENS PRÆMIE FOR PRÆCISION. FABRIKERET AF G.W.KLEIN KJØBENHAVN.
1889 (presented by Prince Georg).
For measuring two angles, probably for use with station pointer. Two alidades with mirrors. Bone scale 0-160-0.

127 (ORLOGSMU 109:1959). Sextant.
Signed on the limb: Invented and Made by Troughton London. No 80
Trade label in the box: "L.Petersen. mekanisk, optisk Instrumentmager og Uhrmager / Laxegaden No 200 i Kjøbenhavn"
c1790 (g).
Troughton's double T-frame. Limb Rad290 with scale 0-150°. Alidade with vernier. Clamp and tangential screw. Three shades for both mirrors. Two screw-on sighting telescopes. Engraved in the alidade: "O.LÜTKEN". Has belonged to Admiral E.Suenson (1805-87). Shaped wooden box. H120. Compare: Whipple 3 no 146.

128 (ORLOGSMU 525:1963).

Compass card. Compensated (?).

Signed in a circle:

ROSA COMPENSATA / E.BARONI

Signed on the reverse:

Rose compensée E.Baroni-Brevette,
Gênes, Rue Bruzza 8-2.

c1890 (inf).

Circular metal frame covered with fine material fastened to the frame by small hooks. Compass rose, black and white, scale 0-360°. Dia205. 32 cardinal points with five-pointed star at north. Concentric, smaller compass rose, 128 points, and again a five-pointed star at north.

129 (ORLOGSMU 339:1963).

Quadrant. Artillery.

Not signed, but possibly German.

Seems to be based on Christoph Schissler's invention of the vertically adjustable sights.

c1600 (g).

Rectangular base with vertical brass stand H178. Vertical slide with scales for "Stein" and "Bley". On one side is a semicircle divided in degrees. Opposite is a quarter circle divided 0-45° in 1° divisions, 0° vertically down. A flap on the side is hinged so that it can be lifted from horizontal to vertical upwards along the edge of the stand. At the top is a scale 45-0-45° (zero vertically down) with plumb bob as for clinometer.

130 (ORLOGSMU 623:1986).

Quadrant. Artillery.

Signed:

D. Kayser Fridricks Wærck 1767
1767.

Brass with steel bar for insertion in gun barrel. (Entered from the museum's file). Cf item 2340.

131 (STENOMUS 215-2). Telescope.

Gregorian.

Signed: J. Bidstrup London

c1795 (fl).

Brass. Tube Dia108 L640. Metal mirror Dia100 with Dia27 aperture. Broken, but repaired. Secondary mirror there. Okular missing. Eye piece reconstructed. Brass tripod.

132 (ORLOGSMU 12:1960).

Quadrant. Artillery.

Not signed.

c1700 (g).

Brass base 45x84. On this is a vertical brass plate 80x64 with engraved sector 45-0-45° with zero vertically down. Brass pendulum indicates inclination. At right angle to this is an arc with scale 45-0-45° and pendulum indicating inclination. Sighting tube with pinhole and foresight. Engraved with fruit and flower ornamentation. Overall H64.

133 (SORØAKAD 549). Telescope.

Refracting.

Not signed, but made by F.G.E.Jünger.

c1855 (g) (pre 1861).

Equatorial mounted. Brass tube Dia90 L1030. Eyepiece Dia45 L70 with rack and pinion focusing. Micrometer. Scales Dia215 for RA and declination with verniers. Mechanical weight driven clock engaging the RA scale ring by worm gear. Tripod with level screws. This is a model for the larger telescope made by Jünger for the Copenhagen Observatory in 1861.

134 (ORLOGSMU 2308:1983).

"Kamal", for sighting and measuring lengths. Mid 19th century (g).

Wooden stick L~300, formed at one

end to a handle. A cord extends from the middle of the stick which has notches cut along one edge, one notch being exactly above the cord. Sighting along the cord, and aligning an object between two notches allows the size of the object to be determined from the distance between the eye and the stick along the cord. Dimensions not known. (Entered from the museum's file).

135 (ORLOGSMU 86:1967). Compass. Azimuth.

Signed in circle around the centre:
AUGUST AUGSBURG / I KIÖBEN-
HAVN.

Early 19th century (reign of King Frederik VI).

Dry. Wooden box 334x334x205 with gimbal mounted mahogany bowl with glass cover. Inside is a white triangular bone prism with a black sighting line. Brass sights. The card Dia190, divided 0-90-0-90°, dark blue writing on light blue background. Marked at North with crowned FrVI.

136 (ORLOGSMU 1016:1977).

Hydrometer. Glass float.

Signed CORNELIUS KNUDSEN /
DANMARK

c1900 (g).

For measuring specific gravity of salt water. Calibrated 1-15 degrees Baumé. Lower glass bulb weighted with lead shots. Overall L230. Zinc box Dia50 H250, with push fit lid.

137 (ORLOGSMU 1393:1969).

Log ship.

Not signed.

c1900 (g).

Sector-shaped Rad160 arced edge L195. Clutch consisting of wooden ring and stopper to be released by a jerk in the log line for letting the log float horizontally on the water when being heaved in.

138 (ORLOGSMU 2509:1982).

Sextant.

Not signed.

Early 19th century (g).

Mahogany. Limb Rad520. Ivory scale L520, 0-125° in 20 min divisions. Brass index arm with clamp and tangential screw. Vernier. Brass bracket for horizon mirror and two shades for alidade mirror.

139 (ORLOGSMU 1391 and 1392:1969). Log ships. Two.

Not signed.

c1900 (g).

Quadrant-shaped wood, with cord. Releasing clutch consisting of wooden ring and stopper, allowing the log to change its position from vertical to horizontal for heaving in. Rad160, arced edge L225.

140 (ORLOGSMU 119:50).

Artificial horizon.

Signed on trade label inside the lid of the box: Thomas Jones / (Pupil of Ramsden) / ASTRONOMICAL / and / Philosophical / INSTRUMENT MAKER / To His Royal Highness / The Duke of Clarence / 62 Charing Cross / LONDON.

c1840 (g).

Wooden tray with roofshaped oxidized brass frame 160x90x105 with two glass panels. Boxwood vial with screw stopper for mercury. Wooden box.

141 (ORLOGSMU 1013:77).

Hydrometer.

Signed, both thermometer and hydrometer: CORNELIUS KNUDSEN KØBENHAVN

c1920 (g).

For salt water. Copper container Dia90 H220 with handle and lid for collecting sample. Mercury in glass thermometer and glass hydrometer.

142 (ORLOGSMU 110:59). Sextant.

Signed, engraved in the frame:

Dollond London

Trade label in the box: L.Petersen / Laxegaden No 200.

c1800 (g).

Brass frame with one vertical and one horizontal strut. Limb Rad124. Scale engraved 0-150° in 30 min divisions. Vernier with magnifier. Clamping and tangential screw. Pinhole sight in brass tube Dia18 L72, interchangeable with telescope. Two shades for horizontal and three for alidade mirror.

143 (ORLOGSMU 86:65). Telescope.

Refracting.

Not signed.

c1920 (g).

Three-draw. Black leather covered brass tube Dia31. Objective brass dust cover. Sliding dust cover at eye piece. Red leather case, marked in gold print: "VJ." for Admiral V.Jøhnke (b.1861).

144 (ORLOGSMU 59:65). Telescope.

Refracting.

Not signed.

Mid 19th century (g).

Single draw. Wooden tube with brass fittings. Dia60 L500-830. Brass draw tube.

145 (ORLOGSMU 230:1966).

Telescope. Refracting.

Not signed.

Late 19th century (g).

Single draw. Nickel-plated brass tube Dia60 L500 partly covered with brown leather. Single lens eye piece Dia20 with dust cover. Draw tube Dia40 L420. Total L967-596. Erecting lens system. Cylindrical leather case with carrying strap.

146 (ORLOGSMU 1202:71). Octant.

Signed, engraved in the adjusting arm for lower mirror: Dollond London.

c1775 (g).

Mahogany frame Rad500, limb with ivory scale divided to 98° in 20 min divisions. Vernier to 1 min. The scale is marked at 93° with three stars in equilateral triangle. Brass index arm with clamp and tangential screw. Sighting telescope missing. Two horizon mirrors, for direct and reverse sighting. The lower mirror can also be used with a pinhole sight.

147 (ORLOGSMU 1390:69).

Parallel rule.

Signed: Capt. Field's improved Parallel / Made in England

c1900 (g).

Mahogany. Brass handle and fittings. 460x80. Scale engraved and white inked.

148 (ORLOGSMU 1394:69).

Sand glass. Log timer.

Not signed.

c1900 (g).

Glass blown in one piece. Framed in brass cylinder Dia30 H88.

149 (ORLOGSMU 1017:77).

Parallel rule.

Signed with owner's name: F.MYGINDE
1864 (MIDSHIPMAN 1861-94).

Not signed by maker.

1864.

Ebonized wood with brass fittings.
L385.

150 (ORLOGSMU 1036:77).

Telescope. Refracting.

Not signed.

Mid 19th century (g).

Single draw. Brass tube, black lacquered
Dia60 L600 (min).

151 (ORLOGSMU 1018:77).

Gunter's scale.

Not signed by maker.

c1865 (g).

Boxwood. L~450. (Entered from the
museum's file).

Signed with owner's name: F.MYGINDE.

152 (ORLOGSMU 2023:78).

Telescope. Refracting.

Not signed.

Late 19th century (g).

Three-draw. Leather covered tube
Dia25 L340-120. Eye piece with dust
cover.

153 (ORLOGSMU 3805:1984).

Clinometer.

Not signed.

c1860.

Wooden base 200x310. Iron index
L165 and disc-shaped weight Dia77
H30. Brass scale 40-0-40°. From the
marine vessel "Esbern Snare".

154 (ORLOGSMU 2925:83).

Telescope. Refracting.

Not signed.

c1700.

Single draw. Brass tube Dia30 covered
with imitation snake skin. Brass draw
tube L250-160. Belonged to Antoine
Nic. le Sage de Fontenay, Army Captain.
(Entered from the museum's file).

155 (HAUCHCOL 322. AWH-)

Inclined plane.

Not signed.

c1800 (g).

Two steel wires about 12 ft long
(L~5000), parallel spaced 3-4 inches
(~10 cm), wall mounted on mahogany
bases at an angle about 22 degrees with
horizontal. A small trolley moves along
one wire on two pulleys. Small bells can
be placed on the other wire to be struck
by an arm extending from the trolley. A
pendulum clock has a release mechanism
for the trolley.

The instrument is in a very dilapidated
state, but from Hauchs description
identical to Nollet's.

Ref: Hauch vol 2 p 47, pl 7 fig1. Nollet
tome 2 p 161 pl 2. La Fond tome 1 p 133
pl IX.

156 (ORLOGSMU 2930:83).

Compass. Dry, marine.

Signed: AUGUST AUGSBURG
KJØBENHAVN

Mid 19th century (g).

Brass bowl Dia200 H180; glass, fastened
with putty. Correction magnets below.
Compass card Dia180.

157 (ORLOGSMU 2931:83).

Binnacle with compass.

Signed: IVAR WEILBACH, KJØBEN-
HAVN

Late 19th century (g).

Wooden (probably teak) octagonal pillar
Dia350 H750 with two opposite

shackles for lashing. Brass binnacle H310, oval shaped 420x360 with oval glass panel 300x200. Two brass oil lamps with H90 chimneys. Inside is a dry compass with copper bowl Dia210 H160 in gimbals. Compass card Dia190.

158 (ORLOGSMU 2932:83).

Binnacle with compass.

Signed: H.E.HOLST KJØBENHAVN
c1865 (fl).

Wooden base H750, heptagonal with two joining sides opening for compensation magnets. Above is a brass binnacle with seven windows in the top part above which is a dome for an oil lamp, which is missing. Dry card marine compass in brass bowl Dia190 H80, gimbal mounted. Bearing sights mounted above the compass. The compass is probably not original with this binnacle.

159 (ORLOGSMU 279:1974).

Hydrometer. Sike's.

Signed, engraved on the stem: Hughes & Son 56 Fenchurch St London
c1900 (g).

Copper sphere Dia40 with stem graduated (a) 0-20 OZ PER GALLON and (b) 0-4/32 (no units stated). Both scales equidistant. Stem L50 has a stabilizing weight. Total L250. Lined and fitted mahogany box.

160 (ORLOGSMU 2923:1983).

Rangefinder. "Stuart's Marine
Patt.499".

Signed: H.Hughes & Son Ltd / LONDON / No 10883.

c1920 (g).

Marked: "FITTED WITH OPTICAL GLASS". Divided glass micrometer.

Screw fit sighting telescope L75. Rack and pinion movement of lower lens and lower part of front with scale lines. Ivory scale plate 130x45 with cut-out for micrometer lens.

Ref: Whipple 3, no 212.

161 (ORLOGSMU 29:1979).

Binoculars. Field glass.

Not signed.

1902.

Brass, dented, obviously caused by use. Eye pieces Dia18 mounted in common brass bracket, adjustable by central screw for focusing. Objectives Dia380 L112-92. Erect image, magnifying about four times.

Marked: MODEL 1902 / MILITAIR GLAS

162 (ORLOGSMU 2503:82).

Clinometer.

Not signed.

c1860.

Teak base 240x200x40. Steel index L260 and lens-shaped weight Dial20. Brass scale 40-0-40° and index guide. From the frigate "Jylland".

163 (ORLOGSMU 3706:84).

Artificial horizon.

Not signed.

Mid 19th century (g).

Mahogany base 144x74 with trough 103x65x15. Roof shaped brass frame 171x92x115 with two glass panels at right angles. Turned ivory stopper with pouring hole to screw on mercury vial. The vial is missing. At the bottom of the wooden trough is a Dia17 hole which does not penetrate the wood; an ivory plate fits the hole.

164 (ORLOGSMU 3712:84).

Station pointer.

Signed H. HUGHES & SON LONDON
/ No 928

c1900 (g).

Brass with white celluloid (?) circular plate with scale Dia96 and about 3 mm thick, 180-0-180°. Two movable arms L329 with clamps.

165 (ORLOGSMU).

Calculator for torpedo firing (?).

Not signed.

c1920 (g).

Brass. Semicircle Dia290, graduated 90-0-90° with dove tailed base plate for mounting. Three adjustable brass scales connected by levers for (1) course and speed, scale 18-27, (2) course and speed of target, scale 16-12, and (3) alidade with brass point as nearsight and notch as foresight. Marked: "Iv.Hvitfeldt 21". Probably made at the naval workshops.

166 (ORLOGSMU).

Altitude meter (?).

Signed: H.E.HOLST KJØBENHAVN

c1865 (fl).

Sighting tube oxidized brass Dia40 L210 with pinhole and cross wires and an index arm indicating on a silvered scale 35-0-35° in 1° divisions. The scale is laid in a brass quadrant Rad170 and 4.5 mm thick. The sighting tube moves freely on the quadrant, which in fact swings like a pendulum, and there is no locking mechanism.

167 (ORLOGSMU 212:1974).

Drawing instruments.

Signed:

KERN & CIE a AARAU / EN SUISSE

c1900 (g).

Set of 20 parts in velvet lined case 320x180x40 with lock. Only one part is missing to make the set complete. On the lid is a silver plate engraved: "F.N.1866".

Ref: Hambly, p 182 and pl XI.

168 (ORLOGSMU). Binnacle.

Not signed.

Mid 19th century (g).

Oak. Box-like base 275x275x260, one side opening as a door. Above is a pyramidal oak frame with three glass panels and one side solid wood. Brass shackle at the top. A brass lamp house can be fitted to one of the glass panels.

169 (ORLOGSMU 1012:1977).

Indicator.

Signed, metal label in the box:

H.MAIHAK / Aktiengesellschaft /
Fabrik für Armaturen u. / techn.

Messinstrumente / HAMBURG

c1900 (g).

Instrument for making pressure-volume diagrams for piston engines. Also known as "Work Measurer" and "Ergmeter". Steel, brass, chrome plated. Drum for chart Dia50. Fitted wooden box 260x220x140, containing the complete instrument with fittings and attachments. Parts list inside the lid.

Ref: Blondel, p 193ff

170 (ORLOGSMU 1010:1977).

Indicator.

Signed: SCHAEFFER & BUDENBERG

GmbH / MAGDEBURG-BUCKAU /

No 22255.

c1900 (g).

As item 169, except: Oak box 220x200x110. A few parts missing.

171 (ORLOGSMU 1032:1977).

Pressure gauge. Test gauge.

Signed, engraved in the brass case:

F.L.D. / B / 18328 printed on central metal plate: KONTROL / MANOMETER

Late 19th century (g).

Two bourdon tube gauges are connected to a common inlet through brass cocks with bone handles. The brass gauges Dia80 H40 have glass front, allowing the brass bourdon tubes to be seen. Eccentric pointer and scale. White metal scale graduated 0-10 KLGR and 0-150 psi. At the centre of the case is drawn a heraldic crowned eagle. Black fishskin covered box, fitted, with blue velvet lining 300x110x50.

172 (ORLOGSMU). Sextant.

Signed: Prof Smiths Etablm i Kjöbenhavn No 136

c1810 (g).

Oxidized brass lattice frame. Brass limb Rad220 with silvered scale 0-130°. Vernier with magnifier. Brass alidade. Clamp and tangential screw. Telescopic sight Dial5 L105. Three shades in square brass frames for index mirror and three shades in round brass frames for horizon mirror. Fruitwood handle.

173 (ORLOGSMU). Octant.

Signed on ivory nameplate:

Mc MILLAN & TALBOTT / 13 TOWER HILL LONDON

Early 19th century (g).

Ebony. Frame with two vertical struts, Rad220. Ivory scale divided 0-105°. Brass alidade with ivory vernier; tangential screw. Sighting telescope. Three circular shades for horizon and four square shades for index mirrors.

174 (ORLOGSMU 3476:84).

Sand glass.

Signed, impressed in the wood at one end: an anchor, "MARINE / No 145 / IMPERIALE"

c1900 (g).

30 minutes. Blown in one piece. Two boxwood discs Dia106 as top and bottom with four brass rods (pillars) between, fastened by thumb nuts. H170.

175 (ORLOGSMU HS 170:89). Log.

Mechanical, Walker's Harpoon.

Signed on the scale: T.WALKER'S / PATENT / HARPOON / SHIP LOG impressed in the brass body: "7170"

c1870 (g).

Cylindrical brass case Dia40 L500 with one fixed and four rotating fins L140. Conical front with eye for fixing cord. The scale has three dials: 1-100, 1-10 and 0-1 miles.

176 (ORLOGSMU 3705:84).

Reflecting circle.

Signed: Pistor & Martins / BERLIN / Patent nr 194

Late 19th century (g).

Brass. Solid plate circle, Dia180. Index mirror. Prismatic artificial horizon. Telescopic sight Dial8 L110 with two shades. Silvered scale 0-90-180-90°. Index arm with two verniers. Magnifier. Tangential screw.

Used at the Nordenskjöld expedition 1878-80 to Greenland.

177 (ORLOGSMU 1389 and 1392:53).

Sand glasses. Two. Log glasses.

Not signed.

c1860 (g).

14 and 28 seconds. Each glass blown in two parts, joined at the necks with putty

and twine. Red painted wooden discs at top and bottom joined by four wooden pillars. H125 and 170, resp.

178 (ORLOGSMU). Chronometer. Marine.

Signed on the dial:

Parkinson & Frodsham /

Change Alley London.

Trade label:

PARKINSON & FRODSHAM /

Chronometer Makers / TO THE /

R. Honble the Lords Commissioners...

Trade label in the box: Carl Ranch /

Östergade No 62, Corner of

Kjöbmagergade etc. (repairs)

1869 (written on label).

Brass bound mahogany case

165x165x175. Gimbals mounted clock.

Silvered dial Dia95. Hours I to XII.

Small seconds dial 10-60. Wind dial.

179 (ORLOGSMU). Sextant.

Signed: H.HAECKE NEUKÖLLN.

c1890 (g).

With dial micrometer reading minutes of arc. Iron lattice frame. Index arm moved by pinion and circular rack. Scale 0-130° with 5° divisions. Pinhole sight, three shades for each mirror.

180 (SØOFSKOL FK 2).

Artificial Horizon.

Not signed.

Mid 19th century (g).

Black cast iron bowl, Dial 35 H30, D20, surrounded by 1.5 cm wide groove. A circular glass plate in brass frame fits over the bowl, which does also a circular brass plate. Wooden case 200x200x65 with sliding lid. No mercury vial.

181 (SØOFSKOL). Globe. Celestial.

Signed: H.HUGHES & SON LTD /

LONDON / 1920

1920.

Marked "THE HUSUN STAR GLOBE".

White with black print. Dia200, mounted in wooden box with brass horizon ring. Brass meridian ring. Adjustable for latitude. Two brass semicircles resting on the horizon meet under right angles in zenith. Educational globe with red and blue pencil for drawing on the globe. Wooden box 270x270x270, brass bound.

182 (SØOFSKOL 1260).

Aiming calculator.

Signed: "WINDSCHEIBE" / Thomsen

u. Schwarzkopf / Kiel-Wik

c1900 (g).

A manual analogue computer for aiming direction by shooting from ships or land. Course is adjusted on a circular scale, wind direction and speed on a ruler, direction to target on another circular scale. Brass dial Dia295, red and green squared. Built into wooden box 330x330x70.

183 (SØOFSKOL). Orrery.

Signed: PARKES AND HADLEY'S /

PATENT ORRERY / SALTER

Late 19th century (g).

Brass disc Dia240, 5 mm thick with racked edge. Cast in the brass disc: "WINTER", "SPRING", "SUMMER", "AUTUMN" and the names of the months. At the centre is a 16-point compass rose. Central pillar for placing a "sun". Cast iron support, painted black, ornamented. Earth globe Dia60 (defective, shows Tasmania and New Zealand). Moon is fitted to a brass arm,

extending from the earth's axis at the south pole. Gears to the rack and to a gear at the support governs the earth's rotation and the moon's orbit. Overall H160.

184 (SØOFKOL). Station pointer.

Signed: "Ed. Sprenger Berlin 8798", eagle with swastica, "M.19".

c1940 (g).

Steel. Expandable arms with verniers. Scale Dia210, 0-180-0° in 30 min divisions. Wooden box 660x260x60 lined with grey material. From the German marine.

185 (SØOFKOL). Station pointer.

Signed: "cln 11773 (FK 17) M 1926", eagle with swastica.

c1940 (g).

Steel. Expandable arms with verniers. Scale Dia150, 0-180-0° in 30 min divisions. Wooden box 480x250x80, lined with green material. From the German marine.

186 (SØOFKOL). Log. Mechanical.

Signed on face of dial: WALKER'S / PATENT / "CHERUB" / SHIP LOG.

Trade label in the box: "CORNELIUS KNUDSENS ETABL KJØBENHAVN", instructions for use in Danish.

c1920 (g).

Brass. Dial Dia70 L360 graduated 0-100 and 0 - 1/4 - 1/2 - 3/4. Two rotators with four fins. L360 with eye for fastening of short cord. Wooden box 540x280x150.

187 (SØOFKOL 6605).

Star finder and identifier (nautical).

c1930 (g).

Circular plastic planispheric maps, six transparent and two white, Dia250. In plastic cover marked: US NAVAL OCEANOGRAPHIC OFFICE.

188 (SØOFKOL). Sighting vanes for "Clausen's bearing dial".

Made by Cornelius Knudsen, Copenhagen. Catalog no 82, 1909.

c1909.

Brass dial with movable ring missing, but see No 195. One brass sighting vane for astronomical observations L220 with slit and wire sights, and one for terrestrial observations with Y-bearings for telescope, both with central brass cone for mounting in the dial. Teak box, fitted, 270x170x160.

189 (SØOFKOL). Azimuth mirror.

Signed: CORNELIUS KNUDSEN

KJØBENHAVN / 54

1909 (Catalogue no 66).

Oxydized brass. Folding structure, to place on the compass. Folded L155, opened L400, W38, H110. Circular spirit level. Central sprung pinion and four feet for resting on the compass glass, sliding base to fit any size of compass. Slit and wire sights. Mirror for reading compass. Fitted wooden box 200x95x80.

190 (SØOFKOL). Dipping needle.

Signed: LORD KELVIN'S / VERTICAL FORCE INSTR NO 2053 / KELVIN BOTTOMLEY & BAIRD LTD / GLASGOW LONDON / BASINGSTOKE

c1915 (firm established 1914).

Oxidized brass circular case Dia96 H38 with glass front. Magnetic needle L-90 swings in vertical plane. Sliding weights

along scale, indicating distance from centre of the needle. Indicating scale at each end of the needle. Used for compensating ship's compass.

191 (SØOFSKOL) Psychrometer.

Wet and dry bulb thermometer.

Signed: R.FUESS /

BERLIN-STEGLITZ / No 173470

1944.

At the top a round chrome plated dome Dia85 with a clockwork driven air suction pump, drawing air in from below and past the 2 thermometers' mercury bulbs, one of which is covered by wetted muslin. Scales -30 to +40° C in 1/5° divisions. Overall L380, W65 Wooden box 420x125x125, with brass carrying handle. Certification: "Prüfschein für den Psychro-Aspirator nach Assmann" by "Luftwaffe" dated 1944.

192 (SØOFSKOL) Rangefinder.

Signed: H.HUGHES & SON LTD /

LONDON / No 9643.

c1920 (g).

Marked: "STUART'S MARINE

DISTANCE METER Patt.498".

130x80x30. Divided glass lens micrometer. Screw fit sighting telescope L75. Rack and pinion movement of lower lens and lower part of front with scale lines. Ivory scale plate 130x45 with cutout for micrometre lens. Wooden box 200x120x50.

Ref: Whipple 3 no 212.

193 (SØOFSKOL) Rangefinder.

c1920 (g).

Black metal case. Marked "MARINE DISTANCE METER / PATT 703 / K.H.I. / No 181". Height of target is set on the instrument; two images are aligned by

rotating micrometer adjustment knob, at the same time turning a white cylinder with a spiral line from which the distance is read on a scale 0-10 cables (1 cable = 120 fathoms). Wooden box 170x120x110.

194 omitted

195 (SØOFSKOL) Bearing dial.

Signed: "CORNELIUS KNUDSEN

KJØBENHAVN / ORLOGSVÆRFTET

SOL- OG PEJLSKIVE No___ / 1899

/ CIX" (crowned) and two anchors.

1899.

Rigid brass circle Dia180 and with movable ring with three scales: 0-360°, 0-90-0-90° and 0-180-0° and four cardinal points. Gimbal mounted. Slit and wire sights L220 for astronomical observations. Y-bearing L220 for telescope for terrestrial observations. Both to be mounted in conical socket at the centre of the brass ring. Teakwood box 275x275x250.

196 (SØOFSKOL)

Analogue mechanical computer for calculating aiming by shooting at sea or land.

Not signed.

c1920 (g).

Mechanical, manually operated with so-called speed correction. Coloured brass circular scales Dia390 and rules for course, speed, wind, course and speed of target etc. Interchangeable scales for appropriate shells. H180 incl brass cone for mounting. Wooden box 460x460x230. Text on the instrument and instructions for use in Danish.

197 (SØOFSKOL)

Analogue mechanical computer for calculating aiming by shooting at sea.

Signed: "BWS / E.A.Uhr c/31 /

Nr 1359".

c1940 (g).

Input: target's course and speed, direction to target, wind direction and speed etc. The instrument adjusts the gun, and computes the flying time for the shell. Spring clock operates an integrator calculating the flying time and signalling the time of impact. Wooden box 490x290x330.

198 (SØOFSKOL 11). Sextant.

Signed C. PLATH 48553 / HAMBURG GERMANY

c1950 (g).

Black metal lattice frame. Index arm L160. Limb L180 with scale -5 to 125° in 1° divisions. Micrometer to 1 min. Three shades for horizon and index mirrors. Black lacquered telescope L90-97. Objective Dia40, Eye piece Dia10.

199 (SØOFSKOL 15). Sextant.

Signed: H.HUGHES & SON LTD

LONDON / MADE IN GREAT

BRITAIN / HUSUN, TRADE MARK

c1920 (g).

Black metal frame. Black limb Rad165 with white lettering -5 to 125° in 1° divisions. Micrometer reading to 0.2 min. Clamp for index arm, when operating the micrometer. The telescope seems to have prismatic optics. Shades at both mirrors. Various accessories.

200 (SØOFSKOL). "Windcorrector".

Not signed.

c1900 (g).

Analogue computer for calculating the correction for wind by shooting at sea or land. Coloured brass disc Dia250 with squares as coordinate system and adjustable rulers. The disk slides in circular frame graduated 0-360°. Settings are made for wind direction and speed, own speed, aiming direction etc. Mounted in wooden box 280x280x80. Similar to item 182. German text.

201 (SØOFSKOL). Dipping needle.

Signed: CORNELIUS KNUDSEN /

KJØBENHAVN

c1909 (catalogue no 72, 1909).

For use by correction for heeling error. The magnet Dia3 L105 is placed on agate bearings in a brass framed house 120x30x40 with windows. On the rear white wall of the house is a horizontal line for sighting the needle, which is balanced by a sliding weight. All fit into a leather case.

202 (SØOFSKOL). Compass. Marine.

Dry.

Signed at the bottom of the bowl:

CORNELIUS KNUDSEN /

KJØBENHAVN

c1900 (g).

Probably educational. The card has ring with normal graduation and directions, stated in Danish. The centre of the card is open so that the suspension of magnets in aluminium ring by means of thin silk cords may be seen. Scale 0-360° in 1° divisions, 128 points, fleur de lys with maker's name at North. Brass bowl Dia280 H170. Glass cover fastened by brass ring. Brass centre-notch for deflector or azimuth mirror. Two knife edges for gimbal mounting. Two brass shackles for transport.

203 (SØOFFSKOL).

Barograph. Aneroid.

Signed, engraved in the base plate:

TRADE "Sestrel" MARK

c1920 (g).

Brass base. Seven white metal vacuum capsules Dia50 H65. Index arm L200 with pen. Drum for recording paper Dia95 H105. Hinged mahogany housing 350x150x210 with four glass panels. Drawer for chart paper graduated 955 to 1060 (presumably millibar) and 7 day per rotation. Brass carrying handle.

204 (SØOFFSKOL).

Barograph. Aneroid.

Not signed.

c1920 (g).

Seven white metal capsules, Dia50 H60. Brass mechanism with index arm L180 with recording pen. Drum for recording paper Dia95 H95. Spring clock drive. Hinged mahogany house 275x185x165 with three glass panels. Opening on a hinge half way up the smallest end.

205 (SØOFFSKOL).

Artificial horizon. Three.

Not signed.

c1900 (g).

(a) black glass Dial20 in circular brass mount, three level screws; (b) as (a), but Dial107, brass and glass bubble level L80; (c) flat basin of nickel plated copper (?). Turned mahogany base Dial40 H30.

206 (SØOFFSKOL). Globe. Celestial.

Signed: HEATH & Co / HEZZANITH / LONDON SE9

c1920 (g).

Educational for navigation. Dia200. Mounted in mahogany box with brass ring as horizon; scale 0-360° in 1° divisions. Brass meridian. Adjustable for latitude. Globe surface is white, with equator, ecliptic and the main constellations in black. Red and blue pencil provided.

207 (SØOFFSKOL).

Telescope. Refracting.

Not signed.

1878.

Single draw. Nickel plated brass. The tube Dia40 covered with black leather. Draw tube Dia30. Minimum L480, maximum L670. Sliding shade at objective. Dust cover at eye piece. Marked: "Søofficerskolens Præcisionspræmie / 1878".

208 (SØOFFSKOL).

Telescope. Refracting.

Not signed.

1864.

Single draw. Brass tube Dia50 L460 covered with black leather. Draw tube Dia45 L270. Sliding shade at objective. Dust cover at eye piece. Engraved in the draw tube: "Søcadet Academiets Præmie for Præcision til C.A.Fuch 1864".

209 (SØOFFSKOL). Globe. Celestial.

Signed on the globe: BERLIN / Geogr.artist.Anstalt / von / ERNST SCHOTTE & Co.

Signed on iron base:

Nautische Werkstätten / Seik u.Co G.m.b.H. / 1426. / M / N152 and eagle with swastica.

c1940 (g).

Dial170. Supported in Dia250 brass horizon ring, scale 0-360° in 1° divisi-

ons. Brass meridian 0-90-0°, adjustable for latitude. Circular iron base Dia280. Printed, lacquered paper gores glued to metal sphere.

210 (SØOFSKOL). Compass. Marine. Tell-tale.

Signed on compass card: Iver Jensen
Borger i Kiöbenhavn
c1780 (fl).

Suspended in a chain from the ceiling. The compass card can be seen from below through a glass dome. The upper part is formed as a closed crown, painted sheet iron. The glass sphere cut with floral motives. Overall H300. Max Dia320. 32-point compass card. Printed and coloured allegorical figures; fleur de lys at North, ornamented East, scale 0-90-0-90°.

211 (SØOFSKOL).

Binnacle with compass.

Signed, engraved in the lamp:
CORNELIUS KNUDSEN KJÖBEN-
HAVN

Signed on compass card: HALLGREN
KJÖBENHAVN
c1900 (g).

Polished cylindrical teakwood binnacle Dia400 H970. 18 positions for corrector magnets in each of three racks (fore-, aft- and thwartships). Heeling error corrector. Two iron globe correctors Dia220. Flinder's bar and clinometer. Polished brass helmet H430 Dia400 with two lamps. Oval glass window 350x190 to the compass.

212 (SØOFSKOL).

Binnacle with compass.

Not signed.

c1900 (g).

Ornamental aft-compass. Five bronze cylinders, one on top of the other forming a supporting column, standing on a bronze step-pyramid with seven steps. Square wooden base 430x430-x270 with wood carvings on the sides. Above the compass house are eight curved bronze struts crowned by a cylindrical finial. The compass in oxidized brass bowl Dia280 painted white inside. Sixteen point compass card, not signed. Overall H1100

213 (SØOFSKOL). Chronometer.

Signed on the dial: Carl Ranch's EFTF
Kjöbenhavn No 603.

Trade label in the box: C.Ranch's
EFTF Kjöbenhavn No 603
c1870 (fl).

Brass house with silvered Dial Dia120, I-XII, seconds dial 10-60, winding dial 56-0. Gimbal mounted in brass bound mahogany case 185x185x195.

214 (ORLOGSMU 4155:84).

Stadimeter.

Made by: A.Hurliman, Paris
c1890 (g).

Oxidized brass, fruitwood handle. Telescopic sight. Optical micrometer coupled to a white cylinder with a number of curves, from which the distance to an object may be read. Overall dimension 200x150.

215 (ORLOGSMU 79:84).

Log. Mechanical.

c1920 (g).

Walker's "Cherub" ship's log. Brass. Rotator with four fins. Ring zinc governor, register 0-100 and 0-1 mile, flax log line.

216 (ORLOGSMU 684:86).

Barometer. Marine, cistern.

Signed: "SMITH / K.S.A.2."

(successor to Jeppe Smith)

Mid 19th century.

Walnut cylindrical case Dia30. Gimbals.

Egg-shaped cistern cover with adjusting screw below. Brass scale 26-30 in 1/12 divisions. "Foranderligt" (changeable) at 28". Vernier to 1/144. Danish text.

217 (ORLOGSMU 3745:84). Sextant.

Signed on index arm:

J.Smith / No 10 / Kiöbenhavn

c1800.

Wooden frame with brass index arm. Scale -5 to 135° in 20 min divisions; vernier to 1 min. Clamp and tangential screw. Telescope Dia20 L140. Three shades in square frames for index mirror, two shades in round frames for horizon mirror.

218 (KRONBORG 221:90).

Station pointer.

Signed:

A.LINDBLAD / STOCKHOLM

c1940 (g).

Steel. Circular scale Dia189: 0-180-0°, 30 min divisions, vernier to 1 min. Tangential screw and clamp for two arms. Arms L440. Two extension arms L450 and L430. Fitted mahogany case 600x230x75.

219 (KRONBORG 103:84).

Drawing aids for charthouse.

Signed:

A.JEFFERSON / 7 MADELEYSt /

HULL / PATENT 3371

c1930 (g).

(a) 32-point compass card. Brass plate Dia78; (b) celluloid sector on knurled

knob, engraved: "WV-VE" on a circle Rad25, apparently adjustable around the centre of the compass card; (c) plate 87x30, with two index marks, oxidized brass (to attach to a ruler ?); (d) boxwood T-square, adjustable angle, brass nut. The compass card may be attached. Ruler L325 W20.

220 (KRONBORG K 3609). Octant.

Not signed.

Trade label: "W.Petersen /

Instrumentmager og Optikus /

(Uhrmager) / i Laxegaden Nr 194 i

Stuen / KIØBENHAVN"

Mid 19th century (g).

Ebony frame Rad400. Single vertical and bowed horizontal strut. Brass index arm and bracket for mirrors and shades. Limb L360. Scale -5 to 95° in 20 min divisions. Vernier to 1 min. Two pinhole sights for forward and reverse sighting. Three shades in square brass frames for index mirror, one shade for horizon mirror. Index arm with engraved ornaments: ship, leaves. Ivory plaque for notes. Clamp for index arm. Shaped oak case 420x480.

221 (KRONBORG 76:79, K3613).

Octant. Signed on ivory plate:

Spencer Browning & Rust London

Signed on the scale between 45 and 50:

SBR

Early 19th century (g).

Ebony frame Rad350. Single vertical and bowed horizontal strut. Limb with ivory scale to 99° in 20 min divisions, vernier to 1 min. Brass index arm and bracket for mirrors and shades. Tangential screw. Two horizon mirrors for forward and reverse sighting. Shades to be repositioned when changing sight-

ing. Double pinhole sight. Pencil with turned ivory cap. Wooden, shaped case. Written inside box: "SÖKAART ARCHIVET".

222 (KRONBORG K3603). Octant.

Signed: JOHN JEFFREY /
NORTH STREET / BO'NESS.

Trade label in the case:

JOHN JEFFREY / Watch, Clock &
Nautical Instrument / MAKER /
NORTH STREET / BO'NESS.

c1860 (g).

Ebony frame Rad 240. Single vertical and bowed horizontal strut. Limb with ivory scale -3 to 108° in 20 min divisions. Ivory vernier. Brass index arm T cross section. Tangential screw and clamp. Pinhole sight. Horizon mirror missing. Three shades in square brass frames for index mirror. Ivory plaque for notes on reverse missing. Wooden, shaped case.

223 (KRONBORG 123:79). Octant.

Not signed.

Mid 19th century (g).

Two vertical and one straight horizontal struts. Ebony frame Rad240. Limb with ivory scale -3 to 108° in 20 min divisions. Ivory vernier to 0.5 minutes. Brass index arm, T cross section. Brass bracket for horizon mirror and shades. Four shades in square brass frames for index mirror. Three shades in circular brass frames for horizon mirror. Threads for telescopic sights. Two sights Dia20. Ebony handle. Mahogany case, shaped 330x305x80.

224 (KRONBORG 3131:50). Octant.

Signed on ivory name plate:

Spencer Browning & Rust. London

Trade label in the case: Willum Peter-

sens Efterfølger / Laurits Kirkeby /
26 Laxegade 26.

Mid 19th century (firm established
1841).

Ebony frame Rad300. One vertical and one bowed horizontal struts. Limb with ivory scale -2 to 99°, stamped "SBR" between 45 and 50. Ivory vernier to 1 min. Brass index arm and bracket for horizon mirror and shades. Three shades in square brass frames for each mirror. Threads for sights. Pinhole and telescopic sights. Ivory note plaque and pencil cap. Shaped oak case, 370x360x65x100.

225 (KRONBORG 74:79). Octant.

Signed: Anchor stamped on scale between 45 and 50.

Trade label in the case:

DAVID STALKER / Watch, Clock &
Nautical Instrument / Maker /
9 COMMERCIAL PLACE, LEITH.

c1870 (g).

Ebony frame Rad300. One vertical and bowed horizontal struts. Limb with ivory scale -2 to 100° in 20 min divisions. Vernier to 1 min. Brass index arm (T cross section) and bracket for horizon mirror and shades. Three shades in square brass frames for index mirror. Threads for telescopic sight, which is missing. Pinhole sight fitted to the edge of the threads can be turned down when used. Ivory note plaque on the reverse. Pencil missing. Shaped oak case 360x350x105x70.

226 (KRONBORG K3588). Sextant.

Signed:

W. SCHUTZ KJØBENHAVN 1793
1793.

Oxidized metal lattice frame. Three

feet L90. Dark hardwood handle. Oxidized brass index arm L350. Brass scale -5 to 140° in 20 min divisions. Brass vernier to 1 min. Tangential screw and clamp. Two telescopic sights Dia20 L150 and L110. Wooden brass bound case, shaped, 360x460x180.

227 (KRONBORG K3597). Octant.

Signed on ivory plaque:

COHEN.NEWCASTLE

Mid 19th century (g).

Ebony frame Rad300. Single vertical and bowed horizontal strut. Ivory scale -2 to 100° in 20 min divisions. Vernier to 1 min. Brass index arm, T cross section, bracket for two mirrors and shades. One set of three shades in square brass frames can be placed for either forward or reverse sighting. Forward pinhole sight broken. Tangential screw. Ivory note plaque on reverse. Painted wooden case, shaped, 370x340x70.

Repaired.

228 (KRONBORG K3605) Octant.

Not signed.

Late 19th century (g).

Ebony frame Rad220. Single vertical and bowed horizontal strut. Ivory scale -3 to 109° in 20 min divisions. Ivory vernier to 1 min. Brass index arm, T cross section and bracket for horizon mirror and shades. Three shades in square brass frames. Double pinhole sight with vane for covering one hole. Tangential screw and clamp. No note plaque. Shaped mahogany case 310x285x100.

229 (KRONBORG 3604). Octant.

Not signed.

Mid 19th century (g).

Ebony frame Rad250. Two vertical and

one straight horizontal struts. Ivory scale -3 to 119° in 15 min divisions, Vernier 0-15 against ? (illegible). Tangential screw and clamp. Brass index arm, T cross section and bracket for mirror and shades. Three shades in circular brass frames for horizon mirror. Black hardwood handle. Magnifier for vernier reading. Two telescopic sights Dia19 L80 and L85. Shaped wooden case 330x300x130.

230 (KRONBORG 3130:50). Octant.

Signed: SMITH & HIND /

HARTLEPOOL

Mid 19th century (g).

Ebony frame Rad240. Single vertical and bowed horizontal strut. Ivory scale -4 to 100° in 20 min divisions. Vernier to 1 min. Clamp and tangential screw. Brass index arm, T cross section. Bracket for horizon mirror. Three shades in square brass frames for index mirror. Telescopic sight Dia20 L120; pinhole sight in tube Dia20 L80. Screw fit red filter. Shaped wooden case 330x300x110.

231 (KRONBORG K 3602). Octant.

Signed on ivory plate: HEILBUTH .

LONDON

Trade label: I.P. MÖLLER /

118 MINORIES. LONDON. /

MANUFACTURER of Chronometers,

Watches, Clocks & Nautical Instru-

ments. DANISH, SWEDISH &

GERMAN LANGUAGES SPOKEN.

Late 19th century (g).

Ebony frame Rad240. Single vertical and bowed horizontal strut. Ivory scale -4 to 108° in 20 min divisions. Vernier to 1 min. Brass index arm, T cross section. Brass bracket with horizon mirror and

three shades for index mirror. Pinhole sight in brass tube Dia20 L80. Ivory note plate on rear. Ivory pencil holder (reconstruction). Shaped mahogany case 330x300x100.

232 (KRONBORG 191:67). Octant.
Signed on ivory plate: MATHESON & Co LEITH

Trade label: Berry & Sons' POLARIS
..... G. BERRY & SON / 63, CHURCH STREET, WEST HARTLEPOOL...

c1860 (g).

Ebony frame Rad 240. Two vertical and one straight horizontal strut. Ivory scale -3 to 107° in 20 min divisions. Vernier to 0.5 min. Index arm, brass, T cross section, clamp and tangential screw. Brass bracket for horizon mirror, three horizon shades in round frames, four index mirror shades in square frames. Telescope sight Dia20 L80, eyepiece missing. Shaped mahogany box 330x300x120.

233 (KRONBORG K 3598). Octant.

Signed on ivory name plate:

Spencer Browning & Rust

(on the scale between 45 and 50°): SBR
c1840 (g).

Ebony frame Rad290. Brass fittings. Ivory scale -2 to 99° in 20 min divisions. Vernier to 1 min. Three shades in square frames for mirror. Horizon mirror missing. Double pinhole sight with sliding vane to cover one hole. Brass alidade, T cross section, clamp.

234 (KRONBORG K 3610). Octant.

Signed: Anchor between 45 and 50° on the scale, indicating one of the Troughtons.

Early 19th century (g).

Ebony frame Rad340. One vertical strut and bowed horizontal strut. Ivory scale -2 to 99° in 20 min divisions. Vernier to 1 min. Brass bracket for forward and reverse mirror. Three shades in square brass frames, movable for reverse sighting. Double pinhole sight with sliding vane to cover one hole. Brass index arm with clamp. Ivory noteplate 19x36.

235 (KRONBORG K 3586). Octant.

Signed: Cornelis Willemsz junior

v:FØHR fecit

c1750 (g).

Wooden (mahogany?) frame Rad320. Single vertical strut and bowed horizontal strut. Brass scale 90 to 0° (note: for zenith distance) with transversals for reading to 10 min. Divisions for minutes are engraved on index arm. Brass brackets for pinhole sight. One mirror. Two shades. Brass index arm. The brass is richly decorated with engraved flowers and foliate.

236 (KRONBORG K 3587). Octant.

Signed on adjusting arm for reverse mirror: Dollond, London

c1770 (g).

Mahogany frame Rad450. Single vertical strut and bowed horizontal strut. Ivory scale 0 to 98° with 20 min divisions, vernier to 1 min. The scale is marked with three stars in triangle at 95°. Forward and reverse horizon mirrors. Brass arm used to rotate the reverse sighting mirror. Two slots for shade positions. Three shades in square frames. Flat brass alidade. Ivory nameplate, blank.

237 (KRONBORG K 3607). Octant.
Signed on ivory nameplate:
Spencer Browning & Co London.
Signed on scale between 50 and 55:
SBR
c1840 (g).

Ebony frame Rad270. Single vertical strut and bowed horizontal strut. Ivory scale -2 to 104° in 20 min divisions. Vernier to 0.5 min. Brass bracket for horizon mirror, shades for horizon and index mirrors. Ebony bracket for sight, which is missing. Ivory note plate, and pencil holder. Brass index arm, T cross section. Clamp and tangential screw.

238 (KRONBORG K 3601). Octant.
Signed on ivory nameplate:
W. CAMPBELL & Co /
SUCCESSORS. HAMBURGH
c1840 (g).

Ebony frame Rad240. Single vertical strut and bowed horizontal strut. Ivory scale -4 to 103° in 20 min divisions. Vernier to 1 min. Brass bracket for horizon mirror with two shades; three shades for index mirror. Thread for telescopic sight Dia20 L90 to 130, and pinhole sight. Brass index arm, T cross section. Clamp and tangential screw.

239 (KRONBORG K 3582). Octant.
Signed on back of index arm:
H. Wolckerts / No 163.
Signed on ivory nameplate:
17 Pitter E K 92
Label in the box: A. Johansen & Co. /
Chronometer, Watch & Nautical /
INSTRUMENT MANUFACTURERS /
149, Minories, London /
MANUFACTORY 11 MYDDELTON
PALACE, CLERKENWELL.
1792 (Hinrich Wolckerts, 1748-1803).

Mahogany frame R290. Single vertical strut and bowed horizontal strut. Brass scale 90-0° in 1° divisions. Transversals and scale on reading edge of the alidade: 10,20,30,40,50 min. Brass brackets for horizon mirror, two shades and pinhole sight. Index arm with engraved flower ornaments. Oak case, shaped, 335x305x100.

240 (KRONBORG 246:36). Octant.
Signed on ivory nameplate:
HARRISON. HULL
Trade label: W.B. HARRISON /
Paint, Oil and Colour Manufacturer /
GENERAL SHIP CHANDLER /
7, Dock Street, Hull
Early 19th century (g).

Ebony frame R240. Single vertical strut and bowed horizontal strut. Ivory scale -3 to 109° in 20 min divisions, vernier to 0.5 min. Brass bracket for horizon mirror and three shades in square brass frames for index mirror. Telescopic sight Dia20 L85. Brass index arm, T cross section. Clamp and tangential screw. Oak case, shaped, 335x305x100.

241 (KRONBORG K 3606). Octant.
Signed on ivory nameplate:
HEATH * DEVONPORT
Early 19th century (g).
Ebony frame R250. Single vertical strut and bowed horizontal strut. Ivory scale -2 to 100° in 20 min divisions, vernier to 1 min. Brass bracket for horizon mirror and shades (missing). Double pinhole sight with slide cover. Flat brass index arm. Ivory note plate, hole for missing pencil. Oak case, shaped 315x305x90.

242 (KRONBORG 75:79). Octant.
Not signed.
c1780 (g).

Mahogany frame Rad460. Single vertical strut and bowed horizontal strut. Scale and nameplate missing, but cutouts there. Mahogany bracket for forward and reverse horizon mirrors and two shades in square brass frames for index mirror. Sight is missing. Mirrors missing, but brass holders there. Mahogany index arm L470 with brass head having brass vernier.

243 (KRONBORG K 3612). Octant.

Not signed.

c1780 (g).

Ebony frame Rad380. Single vertical strut and bowed horizontal strut. Ivory scale -5 to 95° in 20 min divisions, vernier to 1 min. Ebony bracket for forward and reverse mirrors. Three shades in square brass frames for index mirror. Slot for changing position of shades. Two pinhole sights for forward and reverse sighting. Ivory note plate on the back, ivory pencil holder. Blank ivory nameplate. Index arm L380 inner half mahogany, outer half brass, clamp.

244 (KRONBORG K 3581). Octant.

Signed on boxwood scale:

* Made by * / I. Urings. London.

(John Uring, freed from apprenticeship 1754, died 1773. Instrument maker at St. Catherine and also at 174 Fenchurch Street. (Sotheby's catalogue, 25th March 1986)).

c1770 (g).

Mahogany frame Rad500. Straight horizontal strut and single vertical strut. Boxwood scale -3 to 90° in 20 min divisions. Transversals, reading to 2 min. Mahogany bracket for forward and reverse mirrors (reverse mirror is missing), and for two shades in square

brass frames for index mirror. Forward and reverse sighting pinholes. Mahogany index arm with ivory reading scale and index mirror mounted on circular boxwood plate.

245 (KRONBORG 284:37). Octant.

Signed on index arm: Capt /

Lars Helt / From Bergen 1759.

1759.

Mahogany frame Rad520. Single vertical strut and bowed horizontal strut. Brass scale -1 to 90° in 20 min divisions, transversals to 2 min, estimate to 1 min. Mahogany bracket for two mirrors, only horizon mirror there. Two sights and shades. Flat brass index arm, cutout index with 2 min divisions for reading transversals.

246 (KRONBORG K 3616). Backstaff

(Davis' quadrant).

Not signed.

c1740 (g).

Mahogany L650 with boxwood scales and vanes. The small arc has scale 0-60° on two sides. The large arc has scale 0-25° and 90-65° with transversals to 1 min. On the rear is a table of the sun's declination given by dates on the circular scale. "New Stile (sic) of Declination" engraved at the end of graduation. Complete with three vanes.

247 (KRONBORG K 3578). Backstaff

(Davis' quadrant).

Not signed.

c1740 (g).

Dark wooden frame L630 with boxwood scales and vanes. The small arc has scale 0-60° in 1° divisions. The large arc has scales 0-25° and 90-65°, trans-

versals to 2 min. The vane on the large arc is missing.

248 (KRONBORG 82:79). Backstaff (Davis' quadrant).

Not signed. (Probably locally made). c1750 (g).

Mahogany. L720. Vane on large arc is missing. Small arc Rad 300, scale -4 to 60°, large arc Rad680, scale -5 to 30°, transversals to 6 min. Figures and graduation scratched in the wood.

249 (KRONBORG 442:58). Backstaff. Not signed.

c1750 (g).

Torso, the large arc has been cut off. Fruitwood with boxwood small arc Rad180 scale 0-65° in 1° divisions. Overall L600. Inlaid boxwood plate, probably for signature.

250 (KRONBORG K 3579).

Cross-bow quadrant.

Signed: JENS KUSK JENSEN / 1927. 1927.

Reconstruction of Edmund Gunter's instrument from 1623. Mahogany arc and chord, L660, boxwood radial beam. Three sighting vanes.

Ref: Kusk

251 (KRONBORG K 3577).

"The Plow" or plough.

Signed: JENS KUSK JENSEN 1927.

Reconstruction. Similar to the Davis quadrant or back staff, but with only 1 arc, and a sighting beam. Boxwood beam L770 with sighting vane. Boxwood arc Rad260 scale 0-85° in 1° divisions, adjustable sight. The beam has graduations on four sides: (a) 5-12 with

transversals; (b) 10-30 in 1/4 divisions; (c) 30-90 in 1/4 div and, (d) 20-60 in 1/4 div.

Ref: Kusk.

252 (KRONBORG K 3580). Quadrant.

Signed: Jens Kusk Jensen 1927.

Reproduction by Jens Kusk Jensen. He erroneously calls it: "Gunter's movable quadrant". It seems to be modelled after the book by John Sellers: *Practical Navigation*, 1672, page 173 ff: 'The Description and Use of an Instrument for Observation and Operation, called the Removing Quadrant.'

Made of light wood, with boxwood scale. The horizon bar is at one end hinged to a radial bar of a quadrant, and at the other end movable along the quadrant which has scale and transversals, reading to 6 min. Moving over the quadrant is a sighting vane. An additional bar can move vertically on the radial bar, thus facilitating readings of trigonometric functions.

Compare: Holbrook, fig 103: 'Crow's Patent Seaman's Octant'.

253 (KRONBORG 3573). Astrolabe.

Mariner's.

1600.

Brass. Half-circle. External Dia340, internal Dia295, H18. Circle graduated 0-90-0° and 90-0-90°; 1600 engraved in stead of 0 in the latter scale. Alidade with two sighting holes. Suspension ring with finger grips. Under the centre is a half circle Rad87 of solid brass as weight. Marked with four fleur de lys in the form of a diamond, indicating Dutch origin.

Ref: Stimson, p 66.

254 (KRONBORG Box 310).

Depth sounder.

Signed: G.RUNG'S PATENT / No 33 / CORNELIUS KNUDSEN KIÖBEN-HAVN

Late 19th century (g) (patented 1875).

"UNIVERSAL-BATHOMETER / G.RUNG'S PATENT".

(G.A. Rung, meteorologist, Copenhagen, 1845-1903). Glass tube, open one end, closed at the other, in brass casing, Dia50, L600. When lowered in the sea, water will be pressed into the tube, compressing the trapped air. When hitting the bottom of the sea, the tube is closed. The amount of water in the tube, will then be a measure of the depth. Wooden box 80x13x10 with table for depth relative to water content.

255 (KRONBORG Box 309).

Bearing dial.

Made by: Cornelius Knudsen, Copenhagen.

c1910 (catalogue 1910, no 82.).

"Clausen's type". (C.T.E. Clausen, Naval officer, Copenhagen, 1857-?, invented this and other navigational instruments). Brass. Rigid ring with spokes, Dia265 sliding in ring graduated 0-90-0-90° in 1° divisions, and with compass rose. Deviation indicator. Two interchangeable sighting vanes, one with slit nearsight and wire foresight L230, and one with Y-bearings for telescope or binocular. Fits into conical central socket. Wooden (teak) box for dial 285x285x95 and for two sight vanes 260x170x165.

256 (KRONBORG Box 309).

Azimuth mirror.

Signed: C. PLATH. HAMBURG

c1920 (g).

Brass frame L260 W100, painted grey.

To place on compass. Pinhole and wire sights. Prism for viewing underlying compass; two dark shades (green and blue); mirror for reflecting sun or star. Wooden box 320x134x160.

257 (KRONBORG Box 309).

Bearing dial.

Not signed, but made by Cornelius Knudsen, Copenhagen.

c1910 (compare item 255).

"Clausen's type". Brass. Rigid ring with spokes. Dia255 with rotatable ring graduated 0-90-0-90° in 1° divisions and with compass rose. Two interchangeable sighting vanes with slit and wire sights L190 and L250. Fits into central conical socket. Box (spruce) 350x320x210.

258 (KRONBORG Box 328).

Azimuth mirror. "Lord Kelvin's type".

Signed: REGISTERED TRADE MARK / HUSUN / BRITAIN / SERIAL No 2356/47.

c1910 (g).

Blackened brass. Circular base Dia260, with pivot fitting into a hollow at the centre of the compass glass. Supported by struts, a prism allows sighting as well as viewing the compass. Circular bubble level. Two shades. Wooden box. Made by H.Hughes & Son Ltd London.

259 (KRONBORG Box 328).

Course magnifier. "Clausen's model No 64".

Signed: C. CLAUSEN KONSTR 64 / CORNELIUS KNUDSEN KBHVN

c1930 (catalogue).

Oxidized brass open frame 120x58, with pivot fitting into a hollow at the centre of the compass glass. On this two pillars support a bar along the horizon-

tal diameter of a magnifying half lens. This may be inclined to view the compass and lubber line, which is indicated by a Dia2 rod.

260 (KRONBORG). Compass. Marine. Signed: IVER C. WEILBACH / SØLVER & SVARRER / COPENHAGEN c1920 (g).

Bowl Dia260 H150. Gimbals. Compass card Dia190, 0-360°, 112 points, fleur de lys at North. Black print on white.

261 (KRONBORG 1715:51). Rangefinder. Optic, sextant principle. Signed: A. HURLIMANN. PARIS c1890.

Blackened brass. Telescope L90-130, objective Dia30, eyepiece Dia10. Horizon and index mirrors. Index arm operated by micrometer 0-100 units per rotation equals 1°. 1-12° scale. Celluloid calculation dial Dia93 with instructions in Danish. Teak wood box 180x160x110. Overall dimensions: 150x140x100.

262 (KRONBORG 83:79). Rangefinder. Optic, sextant principle. Signed: A. HURLIMANN. PARIS Trade label: WILLUM PETERSEN'S EFTERFØLGER / LAURITZ KIRKEBY / 26 LAXEGADE 26 c1890 (g).

Similar to item 261, except brass, not blackened. This type of instrument was used in the Danish Navy by the end of 19th century.

263 (KRONBORG 77:79). Sextant. Signed on limb: Troughton & Simms. London c1860 (g). Brass. Cross and Y braces. Frame Rad190. Silvered scale -10 to 165° in 10

min divisions. Vernier to 10 sec. Magnifier missing, but holder there. Fruitwood handle. Four shades in square brass frames for index mirror, three shades in round brass frames for horizon mirror. Two telescopes Dia20 L180 and L100. Brass index arm L205, T cross section, clamp and tangential screw. Veneered box, shaped 250x310x115.

264 (KRONBORG 56-L). Sextant. For aviation.

Signed on plaque: LINK SEXTANT / TYPE A-12 SERIAL 1014-43 / LINK AVIATION DIVICES INC / RCAF REF NO 6B/197 c1940 (g).

Black laquered. Probably aluminium. Scale 0-105° in 30 min divisions, vernier to 1 min. Overall dim 280x130x80. Wooden box 325x225x120.

265 (KRONBORG K 3590). Quadrant. Pendulum type. Signed: E. JÜNGER KIÖBENHAVN / Patent c1860 (fl).

Brass limb, oxidized brass lattice. Silvered scale Rad160, -2 to 90° in 15 min divisions, vernier to 1.5 min, magnifying lens. Brass sighting telescope Dia20 L110, fixed to quadrant radius. On sighting sun or star, the index arm will hang freely and assume vertical position. It is here locked by releasing a clamping mechanism. Fruitwood handle. Wooden box 320x215x105.

266 (KRONBORG 93:79). Sextant. Bubble sextant. For aviation. Signed: A.M. / 6B/218 / BUBBLE SEXTANT MK IX A / No 231/43 c1940 (g).

Black laquered aluminium. Overall dimension 230x220x170. Spirit level integral with artificial horizon, illuminated by miniature bulb, built-in battery, clockwork for averaging. Bakelite box 230x190x240.

Made by: Henry Hughes & Son Ltd / Barkinside Ilford Essex

Sold by: Smith's Aircraft Instruments Ltd London NW2

267 (KRONBORG 86:79). Sextant.

Signed on the limb:

W. Weirhert (?) Cardiff

Trade label: H.G.BLAIR & Co / .../53

JAMES' STREET, CARDIFF. (This label is glued over another.)

Late 19th century (g).

Blackened brass frame, three-clover pattern. Rad195. Silvered scale -5 to 135° in 15 min divisions. Vernier to 15 sec; telescope for vernier reading. Sighting telescope Dia20 L80-120. Pin-hole sight Dia20 L80. Four shades for index mirror, three shades for horizon mirror.

268 (KRONBORG K 3596). Sextant.

Signed: SPINDLER & HOYER / GÖTTINGEN / No 632.

Trade label: IVER C. WEILBACH & Co / SØLVER & SVARRER. AMALIEGADE 30. KØBENHAVN
c1950 (g).

Aluminium, partly black laquered. Limb Rad150. Scale 0-120° in 1° divisions, vernier to 1 min. Index arm L150, operated by handwheel by pinion and racked arc. Sighting telescope Dia25 L100. Two-lens eyepiece. Three shades. Bubble level horizon illuminated by miniature bulb. Shoulder rest.

269 (KRONBORG). Compass.

Tell-tale.

Signed on compass rose: CHRISTIAN LYSTRUP / KIOBENHAVN

c1830 (g).

Dia 185. "Royal crown", made of sheet metal, painted red and with six gold-painted arcs, meeting at the top in a sphere with a cross. Glass at the bottom, with central pivot for the compass card, visible from below. Graduated 0-90-0-90°. Fleur de lys at North. Seven points with allegoric figures. Compass rose hand drawn and coloured.

270 (KRONBORG 1284:53). Compass.

Tell-tale.

Signed: F. Meyer Glückstadt Fecit /

1787

1787.

Dia180. "Royal crown", made of sheet metal, painted red with six gold-painted arcs, meeting at the top in a sphere, carrying a cross. The card visible from below through a glass hemisphere with a central pivot for the compass card. Eight point card with allegoric figures, Fleur de lys at North, small ornament at East. At the centre: Justitia with the balance.

271 (KRONBORG 106:84).

Dipping needle.

Not signed (probably G.F.Brander)

c1780 (g).

Square limestone base, 285x285, with two circular scales 0-90-0-90° set perpendicularly to each other. Scales marked: "SEPTENTRID" "OCCIDENS" "MERIDIES" "ORIENS". Two level screws. Two slit and wire sights, for forward and reverse sighting. At the

centre a brass base Dia90 upon which a rotatable pillar with pointer to above-mentioned scale. The pillar carries a vertical brass ring Dia295 graduated 10-0-90-0-10°. A horizontal diametrical brass bar has in the middle bearing notches for the steel dipping needle (broken). Foliate ornamentation at the bottom of the circle.

Ref: Brachner p 275.

272 (KRONBORG 105:84).

Dipping needle.

Not signed.

Mid 19th century (g).

An ostentatious instrument, probably a show piece? In glass globe. Polished fruitwood base 260x250 H130, with three level screws, and 100x100 platform at the top. A cylindric brass column Dia65 H70 supports the glass sphere Dia240, consisting of two hemispheres connected by a horizontal brass ring. A pivot H110 extends from the bottom to about the centre of the sphere. On an agate cup rests the vertical brass ring Dia205. This has to hang on one side of the agate bearing, so a counterweight is applied to the other. This has a pointer indicating the horizontal position on a scale 360° inside the glass sphere, but without numerals. The brass scale for the dipping needle is divided 0-90-0-90-0°. Overall H450.

273 (KRONBORG 92:79).

Reflecting circle.

Signed: Willum Petersen / KJØBENHAVN

Mid 19th century (g).

Brass. Dia210. Silvered scale 0-180-80° in 20 min divisions, vernier to 1 min. Two red shades. Magnifying glass for

vernier. Sighting telescope Dia20 L130-180. Two eyepieces, one with prism for side view. Screw-fit eyepiece cover with four apertures. Mahogany box 260x-260x120 with lock.

274 (KRONBORG 76:84).

Reflecting circle. Prismatic.

Not signed by maker.

c1750.

Signed on silver plaque on the box: "EFTERLADT AF CONTREADMIRAL M. BILLE OG SKJÆNKET FORENINGEN TIL SØFARTENS FREMME AF GEHEIME-CONFERENTS RAAD-INDE BILLE (Michael Bille 1680-1756, became admiral 1734)

Two glass prisms, superimposed. Brass ring with silvered scale Dia140, two scales 0-270° with 0 on one scale coinciding with 270° on the other. The inner scale in 10 min divisions, the outer scale divided in 1°. Two verniers with telescopic reading; telescope missing. Clamp and tangential screw. Ring for sighting telescope, which is missing; adjustable height. Steel tripod stand, fits into recess in fruitwood handle. H230 including handle and tripod. Mahogany box 250x200x150.

275 (KRONBORG 236:48). Telescope.

Refracting.

Signed on draw tube: H.E. Holst /

Kiøbenhavn

c1860 (fl).

One-draw. Brass tube Dia60 L490. Padding cover L290. Objective Dia40 with dustcover and sliding shade L80. Brass draw tube Dia50 L390. Eyepiece, Huyghens ocular, dust cover. Erecting lens in the draw tube.

276 (KRONBORG 87:84).

Reflecting circle.

Signed: Pistor & Martins / BERLIN /
No 22

Mid 19th century (g).

Brass. Solid circle Dia130. Silvered scales 100-180°, 140-0°, 100-180° in 20 min divisions. Vernier to 20 sec with telescopic reading. Clamp and tangential screw. Sighting telescope Dia15 L85. Two coloured shades and angle prism at the eyepiece. Fruitwood handle. Mahogany box 155x155x80.

277 (KRONBORG 81:79).

Reflecting circle.

Signed on brass plaque: Pistor & Martins / BERLIN / Patent No 257

Trade label: Lauritz Kirkeby / Den Kgl Marines Instrumentmager / 26 LAXEGADE 26 KJØBENHAVN

Mid 19th century (g).

Brass. Solid circle Dia165. Silvered scales 180 to 270°, -5 to 125° in 20 min divisions. Vernier to 20 sec. Two shades. One telescopic sight Dia15 L100, one pinhole sight Dia15 L60. Mahogany box 200x200x100.

278 (KRONBORG 84:79).

Dip of horizon meter.

Signed: OERTLING IN BERLIN 571.
(J.A.D.Oertling (1803-66))

Mid 19th century (g).

Instrument for measuring the angle between true and visible horizon. Brass base plate with angled telescope Dia20 L80 for sighting the visible and, by reflection in two 45° mirrors, the opposite horizons. Silvered scale Rad200, 0-55° in 10 min divisions, vernier to 10 sec. Index arm L230. Objective missing.

Principle: the angle between the two visible opposite horizons is deducted from 180°. Wooden box 270x135x105

279 (KRONBORG 86:84).

Reflecting circle. Borda type.

Signed: No 352 Jecker a Paris /
Søe Militr Archv Selsk Nr 9.

Early 19th century (Francois-Antoine Jecker, Paris, 1790-1825).

Brass. Dia280. Spoked ring. Silvered scale Rad125, 0-720° in 20 min divisions, two verniers to 30 sec, with telescopic reading. Smaller arc, Rad70, graduated 150-0° and 0-150° with app 40° between 0 and 0 without scale. Telescopic sight Dia18 L135. Five shades. Fruitwood handle. Fitted mahogany box 305x300x95.

280 (KRONBORG K 3619 A).

Reflecting circle.

Signed: Pistor & Martins / BERLIN /
Patent No 50

Mid 19th century (g).

Brass. Spoked ring. Silvered scale Dia250, 80 to 180°, 140 to 0°, 80 to 180°, 140 to 0° in 20 min divisions, two verniers to 20 sec. Telescope reading of vernier. Sighting telescope Dia21 L170. Three shades. Also pinhole sight Dia21 L100 with angled mirror for sideways viewing. Mahogany box 320x300x135.

281 (KRONBORG 49:37).

Graphometer.

Signed: "R11 n Paris" (engraved, but very difficult to read due to wear)
c1700 (g).

Brass. Semicircular Rad132. Foliate ornamentation. Scale 0-180° and 180-0°. Transversals, reading to 10 min.

Sighting alidade. Compass Dia70. Eight points. Graduated 0-360° in 1° divisions. Marked: "NORT", "nordest", "EST", "sudest", "SVD", sudouest", "OVEST", "nortouest".

282 (KRONBORG K 3621).

Reflecting circle. Borda type.

Signed, engraved in spoke:

Lenoir á Paris No 110

c1800 (g).

Brass. Spoked ring, Dia280. Brass scale 0-720° in 20 min divisions, two verniers to 1 min, no magnifier. Tangential screw. Telescope, green shade.

283 (KRONBORG K3620).

Reflecting circle. Borda type.

Signed on index arm:

Pistor & Martins / BERLIN / No 401

c1860 (fl).

Brass. Spoked ring, Dia210. Silvered scale 0-360° in 20 min divisions, two verniers to 20 sec, read by telescope. Clamp and tangential screw. Small circle, brass scale 60-0° and 0-60°, about 40° between 0 and 0 not graduated. Two movable indices for this scale. Four shades in square frames for index mirror. Telescopic sight Dia12 L160. Two fruitwood handles. Mahogany box 250x260x160.

284 (KRONBORG 109:79).

Declination compass.

Not signed.

c1775.

Limestone base 370x240x40 in wooden frame. Pinhole and wire sights along one side, marked "OCCIDENS". Scale Rad200 at short side marked "SEPTENTRIO": 30-0-30° in 1° divisions. Along

the scale is written "Versus Occidens" and "Versus Oriens". Opposite the short side is marked: "MERIDIES". Brass pillar, steel pivot for magnetic needle, broken. Trace on the base plate indicates the existence of a compass house, now gone.

Ref: Brachner, p 267 ff

Probably G.F.Brandner: *Declinatorium Magneticum*. According to a note attached to the instrument, it is made by Weilbach, Compassmaker, Copenhagen, end of 18th century, in which case it was copied from Brandner.

285 (KRONBORG 91:79). Quadrant.

Signed: GEORG BUTENSCHÖN /

BAHRENFELD BEI HAMBURG / No

4 D.R.P. 36795

c1900 (fl).

For measuring altitude. Spirit level as artificial horizon. Brass frame Rad100 3 mm thick. Telescope Dia20 L160. Index arm L100 adjusted by pinion and racked arc. Scale 0-10-20....80-90-80-70-60°. Vernier to 2 min. Two shades push-fit on the objective. Marked with crowned "M" indicating Royal Marine.

286 (HAUCHCOL 91. AWH B31).

Balance.

Not signed.

c1800 (g).

Brass. Base Dia125. Pillar Dia26-21. Beam with equal arms L400. The beam can be turned so that the centre of gravity can be either above or below the fulcrum. Overall H480. A steel beam L400, 13x5 cross section with sliding weight can be substituted (weight missing). No pans.

Ref: Hauch, vol 1 p 99, pl 16 fig 10.

287 (HAUCHCOL 92. AWH B23, B30).

Pulley stand.

Not signed.

c1800 (g).

Mahogany base 485x120. Two brass pillars Dia20 H450, each with a four-spoked brass wheel Dia110, grooved at he edge. Lever L220 suspended by two cords passing over the two pulleys to two weights. The lever is thus balanced at two ends and is a "mathematical, weightless" balance with no fixed fulcrum. Three notches in the lever divide it into four equal parts. Weights may be applied in these notches, and counterbalanced by weights in the cords.

Ref: Hauch, vol 1 p 89, pl 15 fig 11. Van Marum, p 138.

288 (FREDBORG B17).

Armillary sphere. "Gottorpske Himmelglobus".

Signed on the clock:

Hans Schlemmer fecit.

On the armillary: "Dies werck von mir selbst Inventiert hab ich mit Gott wol ausgeführt. Andres Bosch Büxenmacher von Limpürg Anno 1657" 1657.

Copernican solar system. Clockwork contained in hexagonal wooden base. The sphere consists of a fixed outer frame of the horizon system. Inside this is another frame with the celestial equator moved by the clockwork. Stars and constellations, cut in brass. One rotation to take 25000 years, corresponding to the precession. Overall H2250.

Dia1300.

Ref: King, p 102f

Originally at the Kunstkammer at Gottorp Castle. 1750 at the Kunstkammer in Copenhagen; 1825 at the Copenhagen

observatory as replacement for Tycho Brahes globe, which was destroyed during conflagration in 1728; repaired by Professor Smiths Etablissement, and 1879 donated to the Frederiksborg Museum by J.C.Jacobsen (Carlsberg).

289 (FREDBORG B2404). Clock.

Astronomical, tellurian.

Signed: CLARISSIMUS COSULTISSIMO: REI NAUTICAE BELLICAEQUE FOEDERATARUM INFERIORIS GERMANIAE REGIONUM PRÆFECTUS D.D. IACOBUS COLOR...

Made by Nicolaus Siebenhaer. Clockmaker in Schleswig. 1651.

Eight-day spring clock concealed in ornamented vase shaped house of gilded brass. Earth model with parchment gores. It rotates on a vertical axis within the armillary sphere, and also rotates around a small gilded sun fixed to the top of a central spindle. At the same time the armillary sphere rotates once in a year. The ecliptic maintains a constant orientation. Overall H1380 Dia620.

Ref: King, p 101f.

290 (FREDBORG B3913). Compass.

Marine, tell-tale.

Signed: JOHAN PHILIP WEILBACH KJØBENHAVN

c1750 (g).

In the shape of a closed crown with three bridges. At the top is a dark green sphere with a golden cross. Sheet iron, painted (imitating gemstones). Facing down is the compass covered by domed glass. Compass card as item 101. H300 Dia290

291 (FREDBORG B2409). Telescope.
Refracting. Binocular.

Signed: DOLLOND LONDON
c1830.

Iron frame support. Brass tubes Dia85 L140. Rack and pinion focus. Screw fit eye pieces Dia35 L300. Altitude adjustment by endless screw and racked brass wheel, mahogany rods and cardan link. Mahogany tripod. Overall H1650. (said to be used by Johan Ludvig Heiberg (writer), 1791-1860).

292 (FREDBORG B445). Megaphone.
(Speaking trumpet).

Not signed.

c1860 (g).

Brass L365. Said to be used by admiral Suenson at the battle at Helgoland, 1864.

293 (FREDBORG B2146). Telescope.
Refracting.

Signed on dust cover: T.H.A.W.v.Kohl

Signed on draw tube: Bancks, 440,

Strand / LONDON

c1800 (g).

Black laquered brass tube Dia60. Six-draw, min L240 max L1090. Objective Dia55. Dust cover. Erecting lens. Cylindrical box, wood and cardboard, covered with red leather and paper.

294 (HAUCHCOL 95. AWH A41).

Balance. Angled beam.

Not signed.

c1800 (g).

Turned mahogany base Dia190. Turned brass pillar Dia12-14, H100 supports a vertical brass plate 235x235, 1 mm thick with 5 mm wide and 195 mm long slits along left, right and top edges. In these slits pulleys can be dis-

placed and fastened. Two brass levers L105 rotatable around the centre of the plate can be secured at any angle and rotate as an angled beam. Cords over the pulleys with weights act as balancing forces.

Ref: Hauch, vol 1 p 95, pl 16 fig 3.

295 (SORØAKAD 100). Balance.

Equal arms.

Not signed.

Mid 19th century (g).

Mahogany base 690x295x115 with two drawers. Mahogany pillar H750, turned finial ending in Dia41 mahogany sphere. Brass beam L350, early swan neck pivot. Brass gallows; index pointer seen through circular opening. Brass pans Dia180 with circular railing 60 mm above the pans. Overall H850.

296 (HAUCHCOL 104. AWH B27 and B28). Balance. Chinese Dotchin. Two.

Not signed.

c1790 (g).

(a) shaped mahogany case L310 with two bismers: ivory beams L260 and L105, brass pans Dia 66 and Dia24; (b) shaped mahogany case L405 with one bismer, ebony beam L338, brass pan Dia100. Graduation by tiny beads of silver inlaid in the beam.

297 (HAUCHCOL 109).

Weight. Kilogramme standard.

Signed, engraved in silver plate: KILOGRAMME / Conforme a la Loi / du 18 Germinal an 3 / présenté le 4 Messor an 7 / Fortin F.

Made by Nicolas Fortin.

1799 (4 Messidor year 7 = June 1799).

Brass Dia52 H79 incl knob. Leather covered wooden case lined by red velum and green paper.

298 (SORØAKAD 110). Weight.
Chinese.

19th century (g).

"Bone"-shaped, flat top and bottom.
Gun metal. 105x75x45. Marked on top
with three chinese characters and at
the bottom with a sign like "50".

299 (KRONBORG K3618).

Reflecting circle.

Signed: G.W.KLEIN / KJØBENHAVN
Late 19th century (g).

Brass with oxidized brass framework
Dia260. Silvered scale 0-140°, 180-80°, 0-
140°, 180-80°. Magnifier in brass tube.
Brass index arm 20 min divisions, vernier
to 20 sec. Sighting telescope Dia 20
L120 with two green and two red filters.
Tangential screw and clamp.

300 (KRONBORG K3592). Octant.

Signed: Charles de Kemel. Antwerp.
c1860 (g).

Oxidized brass frame Rad200 and index
arm. Ivory scale -5 to 115° in 20 min divi-
sions. Ivory vernier to 30 sec with mag-
nifier. Sighting telescope Dia20 L80.
Pinhole sight in tube of same dimensi-
on. Red filter, screw fit. Four shades for
index mirror in square frames, three
shades for horizon mirror in round fra-
mes. Tangential screw and clamp.
Mahogany box, shaped. 270x270x140.
This is the same make as item no 319.

301 (HAUCHCOL 70C. AWH C30).

Cube. Wood (spruce). 62x62x62.

Not signed.

c1800 (g).

302 (HAUCHCOL 74. AWH B1). Cen-
tre of gravity box.

Not signed.

c1800 (g).

Sheet metal box 148x80x44 divided in
four compartments of varying dimen-
sions. Painted black with golden edges.
To balance on the edge of a wooden tri-
angular block (missing). The centre of
gravity changes when the com-
partments are filled with a fluid or pow-
der. Moving the whole box on the sup-
port will show the position of the centre
of gravity.

Ref: Hauch, vol 1 p 81, pl 14 fig 4.

303 (SORØAKAD 171).

Plateau's wire figures.

Not signed.

c1900 (g).

(J.A.F.Plateau, 1801-1883). Set of five
for experiments on surface tension
with soap bubbles. Cube 80x80x80.
Double pyramid, base 80x80 H110.
Tetrahedron, side L80. Two circles
Dia80 on three feet.

Ref: Chwolson I, p 576. George, p 139.

304 (HAUCHCOL 77. AWH B21).

Gravity toy.

Not signed.

c1800 (g).

Puppet, holding two lead weights in
bent steel wire, balancing on a pillar.
Painted wood. Overall H~330. There
are three sets, one in good condition
and two defective.

Ref: Hauch, vol 1 p 87, pl 15 fig 8, 9.

305 (HAUCHCOL 78. AWH B12).

Cylinder rolling up a slope.

Not signed.

c1800 (g).

Mahogany Dia160 W58 with inlaid
lead. Mahogany slope 420x160x70.

Ref: Hauch, vol 1 p 84, pl 14 fig 11.

306 (HAUCHCOL 79. AWH B12).

Cylinder rolling up a slope.

Not signed.

c1800 (g).

In the form of a grinding stone. Sheet metal Dia315 H95 painted grey. Mahogany slope 825x125x240.

Ref: Hauch, vol 1 p 84, pl 14 fig 11.

307 (HAUCHCOL 80. AWH B14).

Double cone rolling up a slope. Two.

Not signed.

c1800 (g).

(a) Mahogany cone max Dia150 L300. Point at one end broken. The slope is made of two mahogany boards, trapeze shape, hinged at the smaller end, and set with an angle allowing the cone to roll from the lower end of the "slope", upwards, while its centre of gravity is sinking. (b) Boxwood cone max Dia58 L130. The slope is made as a triangle of mahogany boards, the middle of one being lower than the two others, H35 and H60.

Ref: Hauch, vol 1 p 84, pl 14 fig 14.

308 (HAUCHCOL 81. AWH B10).

Oil lamp, mounted in gimbals.

Not signed.

c1800 (g).

Three brass rings riveted together to form a sphere Dia120. Inside this is an oil lamp Dia50 H40 mounted in brass gimbals. The lamp is weighted at the bottom.

Ref: Hauch, vol 1 p 82, pl 14 fig 10.

309 (HAUCHCOL 82. AWH B17).

Gravity toy.

Not signed.

c1800 (g).

Pair of puppets descending stairs. They are connected by two side bars containing mercury, the displacement of which alters the centre of gravity. Stairs fold to form a box 220x65x65 with drawer for the puppets. Wood covered by coloured paper.

Ref: Hauch, vol 1 p 85, pl 15 fig 14.

310 (SORØAKAD 90).

Balance beams (two) on a stand.

Not signed.

c1850 (g).

Mahogany base 210x140. Mahogany pillar cross section 30x20 at bottom 20x20 at top, H345. (a) Mahogany balance beam L500 W40 is supported by a steel pivot in a brass boss at the centre of gravity or a similar boss above this. (b) Brass balance beam L400 with three holes for support, above, below and at the centre of gravity. Holes of 1 inch spacing for hanging weights.

311 (SORØAKAD 76). Tumbler. Two.

Not signed.

c1880 (g).

(a) Glass in the form of a drinking glass Dia68 H71 with rounded, heavy bottom, so that it rises when tilted. Engraved floral decorations and inscription: "Willst Du wissen was ich bin / So trink mich aus und leg mich hin". (b) Wooden hemisphere Dia61 with turned figure on the flat which will always rise to the vertical when tilted. Overall H85.

312 (SORØAKAD 71 and 72).

Centre of gravity experiment. Two.

Not signed.

c1850 (g).

(71) A brass rod Dia5 bent in a semi circle Rad400 with a radial rod ending in a

brass button slightly above the centre of gravity. When supported at this button, the object will be in equilibrium. (72) A conical brass beaker Dia87 H75, suspended in such a manner that it can turn around a horizontal axis. When filled with water, the centre of gravity will rise, eventually causing the beaker to tip.

313 (HAUCHCOL 94. AWH B60).

Balance. Compound.

Not signed.

c1800 (g).

Mahogany, base 280x130 with two uprights H370 and crossbeam supporting the brass balance from two hooks. Beams L150, two in series, the end of a second-order lever provides the load to a first-order lever, whose counterpoise can therefore balance a heavy weight. Sliding riders on which can be suspended weights.

Ref. Musschenbroek, Tab V Fig 1.

314 (SORØAKAD 93). Balance.

Stand for supporting balances etc.

Not signed.

c1800 (g).

Brass. Base Dia190. Pillar Dia39 at base, Dia36 at top, H510 with urn finial. 6x6 mm brass expansion, held in position by a set screw, and ending in three large brass hooks for suspending balances etc. An extra brass hook can be placed at the top of the stand. Equal arm steel balance, beam L360, box end pivots, gallows H160. Brass pans Dia57. Overall H650-900.

315 (HAUCHCOL 182. AWH G28).

Balance.

Not signed.

c1800 (g).

Brass base Dia87, pillar Dia9 H34. Equal arm steel beam L230. Knife edge bearing. Swan-neck ends with S-hooks. Steel index L80 with turned baluster-like point.

316 (SORØAKAD 96). Balance.

Letter scale.

Not signed.

Late 19th century (g).

Iron base, triangular with curved sides L~110. Pillar of rosewood Dia17-14 H200, baluster turned finial. Brass balance with bent brass wire as pan for letters. Brass counterpoise. Steel index. Scale 0-20 (arbitrary?)

317 (SORØAKAD 97). Balance.

Decimal.

Not signed.

1855 (acquired).

Working model. Iron and brass. The load on a second-order lever provides the load to a balance with uneven lengths of beam. The load to be measured will be ten times the weight on the small pan. Iron frame and lever mechanism. Knife edges. Arresting. Brass pan in three chains.

318 (HAUCHCOL 98. AWH B25).

Balance, Roberval's.

Not signed.

c1800 (g).

Brass base Dia100. Barrel shaped pillar H150 with rolled bands at top and bottom. Brass frame H230 with two steel pivots supporting the upper and lower crossbeams L215. Overall H380.

319 (KRONBORG 184:71). Octant.

Signed on the limb: Ainsley South

Shields

Trade label: H.E.Holst...Østergade 24
Kjøbenhavn. Kgl Hof Instrumentma-
ger.

c1860 (fl).

Oxidized brass frame Rad200 and
index arm. One vertical strut and one
horizontal strut bowed upwards. Ivory
scale -5 to 118° in 20 min divisions. Ivo-
ry vernier to 0.5 min with magnifier.
Telescope Dia20 L80. Pinhole sight in
tube of same dimensions. Red filter.
Four filters for index mirror, three for
horizon mirror. Clamp and tangential
screw. Rosewood (?) handle.

320 (KRONBORG K3959 56:38).

Octant.

Not signed.

Mid 19th century (g).

Ebony frame. One vertical strut and
bowed horizontal strut. Brass index
arm L270. Ivory scale -7 to 106° in 20
min divisions. Ivory vernier to 1 min.
Three filters for index mirror. Double
pinhole sight with red filter.

321 (KRONBORG 379:48). Sextant.

Box type.

Signed on the scale: J & W.E.Archbutt
Westminster Bridge Rd London.

Late 19th century (g).

Oxidized brass. Silvered scale 0-120° in
30 min divisions. Vernier to 1 min. Two
shades. Pinhole sight to slide in posi-
tion, Dia75. Magnifier for reading the
vernier.

322 (KRONBORG 9:84). Pyrometer.

Daniell's register pyrometer.

Signed: C.Baker / 244 High Holborn /
London.

c1900 (fl 1890-1920).

Brass guide L130 for black-lead envelo-

pe for expansion rod. Pivoted brass
index arm L130 and scale divided to 20
min. Brass vernier to 1 min. Mahogany
sectorshaped box 180x160x30. Black-
lead envelope missing.

Ref: Phil Trans 1830, p 257-286. Phil
Mag 10 1831, p 191ff.

323 (KRONBORG K3591). Quintant.

Signed on limb: Schmalcalder 82

Strand London.

c1830 (g) (fl 1806-56).

Brass. Double frame spaced 13 mm by
brass spacers. One vertical strut and
straight horizontal strut. Rad130. Sil-
vered scale -5 to 140° in 20 min divisi-
ons. Vernier to 1 min. Reading by small
telescope. Index arm T cross section.
Sighting telescope Dia19 L85. Pinhole
sight in tube of same dimension. Extra
telescope L155. Mahogany box 205x-
185.

324 (KRONBORG 196:62). Telescope.

Refracting.

Signed on the tube: DOLLOND *
LONDON

Trade label: G.DOLLOND / Optical
Mathematical and Philosophical
Instrument Maker to Her Majesty. 59
St Pauls Church Yard. London.

c1840.

Brass tube Dia71 L1100. Objective mis-
sing. Eye piece Dia34 L250 with four-
lens system. Two smaller eye pieces.
Rack and pinion focus. Brass stand with
universal joint. Folding tripod with
cabriole feet. Overall H600. Mahogany
box 1140x220x130. Brass plaque on
box: "Presented by the British Ad-
miralty to the High Bailiff Ployen
Governor of the Faroe Islands as a Tes-
timonial of His Humane Reception and

Protection of the survivors of the Brig Marwood of Liverpool wrecked near the Island of Videroe on the 24th of January 1847".

325 (KRONBORG 924:53). Globe.
Celestial.

Made by Doppelmayr.

Signed in cartouche: GLOBUS COE-
LESTIS NOVUS. CA STELLARUM
FIXARUM FEC. CEL. ioh hevelium AD
ANUM 17^o exhibens Opera I.G.DOP-
PELMEIERI M.P.P exacte concinatus a
Joh.Geor.Puschnero Chalcographo
Norib A.c. 1750.
1750.

Dial95. 12 paper gores meeting at the ecliptic pole. Axis pointing to the equatorial poles. Brass meridian ring divided 90-0-90°. Dark wooden cradle with octagonal horizon ring with three scales on paper for months and days. Supported by four turned pillars on four wooden feet. Meridian adjustable for latitude. Overall H310.

326 (KRONBORG 436:49). Telescope.
Refracting.
Not signed.
c1800 (g).

Decagonal wooden tube with brass fittings at the ends. Dia41-50 L1300, smallest diameter at objective end. The tube is over a length of 1100 covered with a coarse material. Eye piece Dia36 L275. Push fit focus. Erecting lens. Threads at both end indicate missing parts.

327 (KRONBORG 2276:51). Sundial.
Universal.
Not signed (probably domestic industry).
1812 (marked).

Wood, painted black and white. Block with ten different dials: equinoctial, horizontal, vertical, facing east and west, inclined to north (marked: SEPTEMBRIA) etc. All scales are white with black writing, such as "1802", "1812", "FERROIES" (?). Base 170x250 H620.

328 (KRONBORG 1147:53). Sundial.
Cubic. Portable.

Not signed (probably Nuremberg).
Late 18th century (g).

Wood 66x64x62. Five faces with gnomons and scales. Brass plate gnomons. Flower and vine ornaments at the corners outside the scales. Also sketch of landscape. Fitted compass Dial3, scale has arrow for variation.

329 (KRONBORG 1149:53). Diptych.
Not signed (probably Nuremberg).
c1800 (g).

Wood 68x43x16. Fitted compass Dia24 with glass cover, variation indicated about 20° west. Cord gnomon adjustable to latitude. List of latitudes of 36 towns from 40 to 56° north. Flower and vine ornamentation.

330 (KRONBORG 1148:53). Diptych.
Signed: J.P.Khininger fec. / NORD
OST SUD WEST
c1800 (g).

Wood 68x43x16. Fitted compass Dia24, glass missing. Arrow sign for variation. Cord gnomon adjustable for latitudes 40 to 56° north. Plumb bob. Scales with roman and arab numerals. List of latitudes of 36 towns. Flower and vine ornamentation.

331 (KRONBORG 117:79). Diptych.
Not signed (probably Nuremberg).
c1800 (g).

Wood 68x43x16. Fitted compass, glass and needle missing. Cord gnomon adjustable for latitudes 35-55° north. Arab numerals 4-12-8. Fleur de lys motifs.

332 (KRONBORG 191:38). Diptych.
Signed on the lid: AS / AUTOR
c1800 (g).

Wood 69x46x19. Fitted compass Dia28. Eight-point compass rose in blue colour. Only one position for cord gnomon. No plumb bob. Arab time numerals 5-12-7.

333 (KRONBORG 244:36).

Thermo-Hygro-Barograph.
Triple recorder.

Signed on aluminium plaque:
P.DÖRFFEL. HOF-OPTIKER UND
MECHANIKER / UNTER DEN LIN-
DEN 44. BERLIN N.W.7 / O.B.

No2495

Signed on brass plaque: CORNELIUS
KNUDSEN DANMARK

Late 19th century (g).

(a) Temperature, Bourdon tube liquid filled thermal system. Brass. Recorder chart -10 to +40° C. (b) Relative humidity. Hair hygrometer. Brass mechanism. Chart 0 to 100 % RH. (c) Barometer. Aneroid with six silvered metal discs. 9 cm strip chart, spring drive for chart drum. Eight days per rotation. Mahogany case with glass paneled sides 380x310x170. Has belonged to King George I of Greece, presented to the museum by Prince George of Greece.

334 (KRONBORG 33:60). Sundial.
Portable.

Signed on compass rose: IVER
JENSEN BORGER KIÖBENH

Late 18th century (g).

Cylindrical brass case Dia67 H23. Compass card with eight points graduated 0-90-0-90°. Glass cover. Brass ring with roman numerals IIII-XII-VIII fits over the glass and has a folding brass gnomon plate, probably for Copenhagen latitude. Circular lid fits over the box for protection.

335 (KRONBORG 119:79).

(a) Nocturnal. Wood Dia230 H20, index arm L210. (b) Moon calender. Wood Dia133 H14. Reproductions by Jens Kusk Jensen. Cf. item 250.

1913.

336 (KRONBORG 110:79).

Variation compass.

Not signed.

Late 19th century (g).

Brass plate 290x120, circular at the short ends, which also have scales 28-0-28°. Rotatable at the middle is a brass case 200x35 with glass cover, magnetic needle L190 and brass index.

337 (SORØAKAD 124).

Water compression apparatus.

Oersted's piezometer.

Not signed, probably made at the workshop of the Polytechnical University of Copenhagen.

1851 (acquired).

A thick walled (6 mm) glass vessel Dia95 with brass fittings. At the top a brass cylinder Dia47 H130 with crank operated leather piston Dia45 for water compression and spout for filling. Mahogany base 285x285. The internal glass piezometer is heavily damaged.

Ref: Meyer, Vol I p CXXXVII to CLIII etc. Videnskabernes Selskabs Skrifter, Copenhagen 1826, II p 305. Poggendorffs Annalen, Vol 9 p 603.

338 (SORØAKAD 106). Weights.

Not signed.

Late 19th century (g).

Set of eight in mahogany box. (1hg, 5dg, 2 dg, 2dg, 1dg, 5g, 2g, 2g, (1g missing)).

339 (SORØAKAD 108).

Lead shots in boxwood case.

Not signed.

Mid 19th century (g).

Shots of varying sizes for taring balances. Boxwood lid to screw on. Dia76 H37 (incl lid).

340 (HAUCHCOL 134. AWH C13).

Pascal's vases.

Not signed.

c1800 (g).

Brass plate 140x140 on four turned brass pillars H160. In the middle of the plate is a Dia85 hole with a cover underneath held up against a seat by a cord from a balance beam, balanced by weights ("Boyle's valve"). Above the hole can be placed three differently shaped glass vessels: one conical Dia325-90 H450, one narrow cylindrical Dia50 H390 and one wider Dia105 H440. Demonstration of water pressure only depending on the height of water and not the amount.

Ref: Gli Strumenti p 321.

341 (HAUCHCOL 135. AWH C12).

Pascal's vases.

Not signed.

c1800 (g).

Mahogany base Dia270 on three turned mahogany feet and carrying a mahogany pillar H500 with an unequal arm balance. Brass pan for weights on the long arm. The short arm carries a piston at the bottom of a Dia45 H280

glass tube standing in a Dia120 glass vessel H310. To demonstrate that the same water levels in the narrow and the wide glasses exert the same force on the piston. All placed in a sheet metal box with a brass spout for emptying. Overall H680.

Ref: Gli Strumenti p 321.

342 (KRONBORG 114:79).

Course indicator.

Not signed.

c1800 (g).

For use by convoy sailing with sailing ships. Brass compass rose Dia170 with 32 cardinal points, fleur de lys at North. Two copper indices can be placed on the rose giving directions relative to a vind index. Directions marked are (translated from Danish): "The Wind", "G The Line by the Wind * over Starboard H", "I The Line by the Wind * over Backboard K", "L Perpendiculaire * of the Wind M" (* indicates the centre of the rose). An alternative index is marked: "Vinden", "N Vinkelen til * Ordre de Retraite Q", "P Vinkelen til * 3de Ordre de Marche O". Mahogany box 238x240x35 with sliding lid. Cf. item 100. See: Randier, p 213, (Hurricane dial).

Ref. *Søe-Evolutioner eller En Orlogs-Flodes Ordener og Bevægelser...* by Comm.-Capt. C.F.L.de Fontenay, from P.Paul Hostes, *L'Art des Armees Navales*, Copenhagen 1743.

343 (KRONBORG 1437:86).

Compass-like instrument.

Signed: H. & F. Müller. Trieste.

c1900 (g).

Brass case Dia205 H70 with inner circular scale divided N, E, S, W and equivalent graduation 0-90-0-90° and 0-8-0-8

and an outer circular scale similarly divided. On the back of the instrument are two adjustments at right angles with windows showing scales -40 to 0 to +40°. Probably a compass with built-in compensation magnets? Wooden box 250x250x100.

344 (KRONBORG 63:42). Telescope.

Refracting.

Not signed.

Late 19th century (g).

Brass. Four draw tubes. Outer tube Dia55 L220, brass L120, wood L100. Dust cover on objective. Objective Dia50. Max L880 min L255. Smallest draw tube Dia28. Suède carrying bag.

345 (KRONBORG 55:38). Telescope.

Refracting.

Not signed.

Late 19th century (g).

Two draw tubes. Outer tube Dia60 L400. Leather covered L240. Sliding shade for objective. Smallest draw tube Dia37. Max L915 min L420.

346 (KRONBORG 5:81). Telescope.

Refracting.

Signed: Silberrad London / day or night

c1800 (g).

Single draw. Outer tube wood Dia62 L480. Draw tube brass Dia47 L420. Max L910.

347 (KRONBORG 2290:51). Telescope. Refracting.

Signed on draw tube: H.Hughes / London / Day or Night

c1900 (g).

Brass. Two draw tubes. Outer tube Dia62 L350, blackened L200. Max L920 min L385. Objective Dia40.

348 (KRONBORG 374:68). Telescope. Refracting.

Signed: Stalker / Leith

Second half 19th century (g).

Brass. Single draw. Outer tube Dia60 L480. Draw tube Dia41. Max L900, min L510. Sliding sun shade L110 and dust cover at objective. Dust slide at eye piece.

349 (KRONBORG 23:57). Telescope.

Refracting.

Signed: D.Cohen / Newcastle

Second half 19th century (g).

Wooden tube with oxidized brass ends. Outer tube Dia61 L340. Two draw tubes. Eye piece Dia42, with dust slide. Max L895, min L375. Marked: "Skænket af Kaptainløjtnant O. C. Hammer til Toldassistent H. J. Ernst Føhr 1864"

350 (KRONBORG 2291:51).

Telescope. Refracting.

Signed: la Filotecnica / Ing A.Salmoiraghi & C / Milano

Late 19th century (fl).

Oxidized brass tube (dented) tapers from objective Dia71 to eye piece Dia44. Nickel plated or white metal draw tube Dia33. Max L790, min L640.

351 (KRONBORG). Telescope.

Refracting.

Signed: Dollond London

c1800 (g).

Single draw. Mahogany tube Dia83 L630 with brass fittings. Brass draw tube Dia67. Eye piece Dia50 with slide dust cover. Objective Dia70 with push fit dust cover. No erecting lens.

352 (KRONBORG 228:50). Telescope.
Refracting.
Not signed.
1674.
Single draw. Wooden (boxwood?) octagonal tube Dia35 L300. Brass fittings on ends. Objective Dia15 with dust slide. Brass draw tube Dia22. Max overall L565, min L340. Eye piece lens Dia15 with dust slide. Erecting lens. Draw tube in three parts screwed together. Carved in the outer tube: "H I" and *1674*.

353 (KRONBORG 59:86). Telescope.
Refracting.
Signed: Bennett / CORK
Mid 19th century (fl).
Tube Dia63 mahogany L170 with brass ends, total L370. Three brass draw tubes. Push fit shade with dust slide at objective end. Erecting lens.

354 (KRONBORG 327:48). Telescope.
Refracting.
Not signed.
c1800 (g).
Single draw. Leather covered brass tube. Objective end Dia68 tapering to Dia55, L750. Max L950. Objective Dia60. Push fit shade L115. Brass draw tube Dia33. Ocular Dia16; dust slide.

355 (KRONBORG 902:54). Telescope.
Refracting.
Signed: Cail / Newcastle on Tyne / Day or Night
Mid 19th century (g).
Tube Dia61 L490, cloth covered brass with push fit shade L120. Dust slide at objective missing. Single draw tube Dia45. Two-lens eye piece. Erecting lens.

356 (KRONBORG 11:84). Telescope.
Refracting.
Signed: Fra Prof Smiths Etablissement / Kiöbenhavn No 626 / Dag og Nat
c1830 (g).
Leather covered mahogany tube Dia65 L500. Push fit shade L120. Objective lens Dia40. No dust cover. Single draw. Brass draw tube Dia48. Eye piece with dust slide. Two field or erecting lenses. Two-lens eye piece (Huyghen's ocular). Max L920, min L530.

357 (HAUCHCOL 140, AWH C21).
Communicating vessels.
Not signed.
c1800 (g).
Demonstration of relative densities of fluids. A glass U-tube H540 and H200 is mounted on a vertical wooden board 80x480 with a scale (inches) between. Different fluids in the two branches will rise to levels inversely proportional to their densities. Mahogany base 180x120.
Ref: Hauch, vol 1 p 130, pl 24 fig 1.

358 (HAUCHCOL 138, AWH C22).
Communicating vessels.
Not signed.
c1800 (g).
Demonstration of relative densities of fluids. Two identical glass tubes H700, open at the bottoms, are at the top connected by a brass T-tube. To this may be fitted a cylinder with piston (missing). When the two tubes are standing in different fluids, and pressure is reduced by means of the piston, the fluids will rise in the tubes inversely proportional to their densities. (Difference in vapour pressure is apparently not considered). Mahogany mount-

ing plate H800 with brass scale 0-24 (inches). Mahogany base 235x140.

359 (HAUCHCOL 139, AWH C4).

Communicating vessels.

Not signed.

c1800 (g).

Glass jar Dia130 H320 is at the bottom connected by a brass tube with stop cock to a brass fitting, which holds six glass tubes of various diameters. It has a conical connection, and may be substituted by other fittings, of which none are present. Brass stand, base Dia200. Overall H490.

360 (HAUCHCOL 153, AWH C31).

Communicating vessels.

Not signed.

c1800 (g).

Glass jar Dia140 H270 has at the bottom a brass connection with a stop cock to a glass tube Dia20 H200. Turned mahogany foot Dia160. Overall H360.

Ref: Hauch, vol 1 p 133.

361 (HAUCHCOL 143, AWH-).

Turbine. Segnèr's.

Not signed.

c1800 (g).

(J.A.Segnèr (1704-77) professor at Göttingen). A mahogany frame supports the sheet metal turbine, consisting of a top container for fluid, which escapes through slanted holes at the bottom. Here the fluid enters the rotor, also through slanted inlets, thus forcing it to rotate. A tray at the bottom has an exit spout. The rotation is via an angled mahogany gear which transfers to a horizontal mahogany axle by which a load may be hoisted. Overall H760. Mahogany base 330x210.

Ref: Rosenberger, vol II p 345. Hauch, vol 1 p 124, pl 22 fig 14.

362 (HAUCHCOL 154, AWH-).

Density apparatus.

Not signed.

c1800 (g).

Two stands with 12 (two are missing) bodies for determining density: cubes, spheres, cylinders of various material: metal, wood, bone etc. The stands of mahogany, baluster shaped pillar, urn shaped finials. Base Dia140 H280.

Ref: Hauch, vol 1 p 131, pl 24 fig 3, 4.

363 (HAUCHCOL 164, AWH C38).

Hydrometer. Nicholson's.

Not signed.

c1800 (g).

(W.Nicholson (1753-1815). Invented 1789). For densities higher than water. Lacquered sheet metal. Heavy conical lower part, connected to larger cylindrical float. At the top is a pan supported on a thin rod. Sheet iron box Dia65 H250.

Ref: Van Marum, p 223. G Turner I, p 94.

364 (HAUCHCOL 165, AWH C39).

Hydrometer. Nicholson's.

Not signed.

c1800 (g).

For densities less than water. Lacquered sheet metal. Conical pan below. Cylindrical float and stem to pan above. Overall H260. Sheet iron box Dia70 H300 with flannel bag for the hydrometer.

365 (SORØAKAD 159). Hydrometer.

Signed: Alkoholmeter efter Tralles 12 $\frac{1}{2}$ °R. Julius Nissen

c1850 (fl).

Alcoholmeter. Tralles'. Glass. Weighted bulb. Cylindrical float with thermometer. Stem L370 with paper scale. Glass-beaker Dia30 H310 (top broken). Fishskin covered box with arched lid 380x95x70. Suède lining.

366 (KRONBORG). Barometer.

Marine. Cistern.

Signed: JAs BASSNETT / LIVERPOOL
Mid 19th century (g).

Mahogany case, barley-sugar-twisted, with thermometer -10 to 140. Two ivory scales on slant. Flat glass. English text. Vernier with ivory adjustment knob. Memory pointer. Brass gimbals. L950.

367 (KRONBORG 50:49). Barometer.
Cistern.

Signed: T.J.WILLIAMS / CARDIFF &
PENARTH

Mid 19th century (g).

Mahogany case, rectangular cross section. Ivory scale on slant 27-31 with fleur de lys at 29.5. Vernier, adjusting knob missing. Flat glass cover. English text. Rounded pediment. Thermometer (broken) 0-130. Brass cistern house Dia60. L950.

368 (KRONBORG 342:70). Barometer.
Bulb cistern.

Not signed.

Mid 19th century (g).

Uncovered glass tube. Mounted on softwood. Paper scale 145x80 with Danish text.

369 (KRONBORG 96:84). Course indicator. Battenberg's.

Signed: BATTENBERG'S COURSE
INDICATOR

Made by: Elliott Brothers Ltd, London
(attached operating instructions).

c1920 (g).

Brass ring Dia305 with scale 0-90-0-90° and 16 compass points. On central arbor are two brass rulers with scales 0-15, 0 at the centre. A brass circle Dia120 rotatable on the same arbor, but with its centre 8 cm from the arbor. In the large ring an aluminium plate can be rotated, having black and red lines spaced at 9 mm. Supported on three brass feet. Wooden box 355x355x100.

370 (KRONBORG 156:55). Protractor.
Not signed.

Late 18th century (g).

Semicircular. Brass, 1 mm thick. Outer Dia455. Inner Dia398. Scale on the arc: 0-180° in 10 min divisions. Also scale for polygon angles. The diameter is graduated 0-100 equidistant from rim to centre and 0-100 from rim to 5.6 cm from centre. Adjustable radius, hinged at the centre, clamping screw at the periphery. Ref: Hambly, p 122. Blondel, p 29.

371 (KRONBORG 87:79).

Anchoring instrument.

Not signed.

Late 19th century (g).

Mahogany plate 457x287 with two compass roses fastened by screws. A lever system and a third compass rose are adjustable in angles and lengths. The function is not known.

372 (KRONBORG 190:67).

Navigation educational apparatus (?).

Not signed.

Late 19th century (g).

Two compass roses on brass plates Dia125 and two small mahogany ship's

models L100. In fitted mahogany box 330x140x50. (Label: Made by Captain J.Jensen, S/S Sara).

373 (KRONBORG 126:79).

Anemometer. Hagemann's portable.
Signed: Anémomètre de Hagemann
c1900 (g).

Two glass tubes mounted on a wooden frame are connected at the bottom. At the top one tube is bent at a right angle and formed as a funnel; the other pointed and turned upwards. Partly filled with water and held with the funnel tube against the wind, the water level will drop in this and rise in the other. The difference in level is read on a brass scale in m/s and Beaufort. Wooden box 420x100x50 with instructions for use in English.

374 (KRONBORG). Hydrometer.

Alcoholmeter.

Made by Julius Nissen, Copenhagen.
Signed: Alkoholmeter efter Spendrup
Tp9°R. Julius Nissen
c1860 (g).

Glass. Lead shots in weight bulb, float and glass stem L160 with paper scale 4-15 in increasing intervals. Overall L250. Shaped wooden box with domed lid 260x50x40 lined with blue material.

375 (KRONBORG 116:75). Barometer.
Marine. Cistern.

Signed: J.HARRISON / HULL
Mid 19th century (g).

Decorated wooden (walnut?) case, barley-sugar-twisted. Two ivory scales on slant with key adjustments of two verniers. Scale 26.3 to 31.0 in 0.1 inch divisions; vernier reading to 1/100 inch. Domed glass cover. Mercury thermo-

meter 0-130° F with indications: F/I at 32°, T/R at 55°, S/H at 76° and B/H at 98°. Text in English. "Change" at 29.5 inch. Brass gimbal mounting.

376 (KRONBORG). Sounder.

Signed: LYTH / Stockholm
c1900 (g).

Heavy brass instrument, with a pulley Dia170 (1 rotation = 0.5 metre) over which a wire lowers a weight (missing) into the sea. The pulley runs in a heavy brass frame suspended in a heavy steel ring. Gears for the register are mounted in a brass case 160x900x25 on the side of the pulley frame. The register has two dials indicating metre (0-9) and 10 metres (0-90). Overall dimensions of the instrument 320x190x80. Wooden box 330x235x150 with brass handle.

377 (KRONBORG 153:70). Telescope.
Refracting.

Signed: T.Harris & Son, London /
Day or Night
c1880 (g).

Single draw. Leather covered wooden tube Dia67 L450. Objective Dia40 with dust cover. Draw tube Dia46 L400. Two-lens eye piece (damaged). Erecting lens. Max L930, min L550.

378 (KRONBORG 60:86). Telescope.
Refracting.

Signed: Ja^s Long / Royal Exchange
/London

Late 19th century (g).

Three-draw. Wooden tube Dia48 L220. Objective Dia40. Smallest draw tube Dia29 L140. Screw fit dust cover. Erecting lens. Two-lens ocular. Max L755, min L235.

379 (KRONBORG 61:86). Telescope.
Refracting.

Signed: W.Harris & Son / 50 Holborn
LONDON

Mid 19th century (g).

Three-draw. Wooden tube with brass fittings Dia39 L170. Objective Dia35. Dust cover. Smallest draw tube Dia23 L125. Two-lens eye piece. Erecting lens. Max L545, min L195.

380 (KRONBORG 534:73). Telescope.
Refracting.

Not signed.

Mid 19th century (g).

Three-draw. Wooden tube with brass fittings, Dia33 L135. Objective Dia28. Dust cover. Smallest draw tube Dia20 L96. Two-lens eye-piece. Erecting lens.

381 (KRONBORG 93:84). Baroscope.
Not signed.

c1800 (g).

Wooden plate 395x97 has a mounted thermometer (-30 to +40° R). A closed glass tube contains a strong solution of a salt which, depending on temperature will precipitate. Said to forecast the weather. Explanatory labelling in Danish.

382 (KRONBORG 2273:51).

Barometer. Cistern.

Signed: Forfærdiget af J.C.Jensen /
Uhrmager og Optiker, Esbjerg

Mid 19th century (g).

Wooden board with open mercury in glass tube. Shallow turned cistern cover. The board has curved sides and rectangular top with glass covered paper scale 27-28-29 inches (Danish) with "Foranderligt" (Change) at 28 inch. Heading of scale paper printed "Barometrum". Overall H940.

383 (KRONBORG 104:84). Barometer.
Marine. Cistern.

Signed: MOWBRAY / HARTLEPOOL
c1870 (g).

Mahogany case with inlay mother of pearl ornaments. Ivory scales on slant behind flat glass. Ivory vernier with key adjustment. Scale 27-31. English text. Thermometer, scale in "FAHR^t" and "REAU^R". Arced pediment.

384 (KRONBORG 1155:53). Log.

"Walker's Harpoon ship's log A 1".

Signed, print on the register: T.WALKER'S / PATENT / HARPOON / SHIP LOG / A 1.

Trade label: H.E.HOLST / OPTICAL
INSTRUMENT MAKER / ÖSTERGADE 24 / COPENHAGEN

c1860 (g) (model A2 was introduced 1865).

Brass. Body Dia42 L520. Rotator with five fins. One stabilizing fin. Register with three dials: 0-1, 1-10 and 10-100 on white enamel face, which may be protected by a brass cover. Conical front with ring for fastening the log line. Wooden box 590x175x170 with trade label and instructions in the lid.

385 (KRONBORG 1393 and 1395:53).

Sandglasses. Two.

Not signed.

Late 19th century (g).

Log glasses, 14 seconds. Wooden octagonal top and base 75 mm across. Four wooden pillars, rather crudely made. Glasses in two parts, joined at the necks by putty and twine.

386 (KRONBORG 97:79). Sandglass.

Not signed.

Late 19th century (g).

Wooden circular top and base Dia93. Four turned pillars, painted black and gold. The glass in two parts joined at the neck by putty and twine. Broken at the necks. Sand gone.

387 (KRONBORG 96:79). Sandglass.

Not signed.

c1900 (g).

Probably 30 minutes. Mahogany, top and base 75x70 slightly domed. Four baluster turned mahogany pillars H165. Between two pillars and joining top and base firmly is a mounting plate with a brass rod in the middle, acting as axle for wall mounting of the instrument.

388 (KRONBORG 1152:53). Log.

Mechanical. Taffrail with drift indicator.

Not signed. Probably Danish; must be an early attempt to make a taffrail log.

Mid 19th century (g).

Semi circular mounting plate Dia285. Varying thickness: 35 along the diameter decreasing to 20; white painted wood with black painted compass directions at 10 deg intervals for measuring drift. Brass register in brass stirrup. Two pointers pivoted at the centre of the dial; scales 1-5 and 10-60. A smaller dial is graduated 0-2-4-6-8. Flax log line, about 16 metres. Rotator with three fins.

389 (KRONBORG 285:56). Sandglass.

Not signed.

Late 19th century (g).

14 second log glass. Wooden octagonal base and top 78 mm across. Four pillars, crudely made; overall H130. Two glasses joined at the necks by putty and twine.

390 (KRONBORG 95:84). Sandglasses. Three.

Signed: 14 sec / CORNELIUS KNUDSEN / KIÖBENHAVN

c1900 (g).

Pocket log glasses, 14 seconds. Glass blown in one piece. Mounted in brass house Dia25 H85 with one end to screw off.

391 (KRONBORG 44:61).

Seaman's tobacco box with calender and log table.

Mid 18th century (g).

Dutch. 175x50x35. Oval shaped with brass top and bottom; copper sides. Perpetual calender engraved in the lid. At the bottom engraved a table to be used when logging the speed of the ship.

Engraved in the lid "Reglit Door Zee. Voor christi 45", and a crowned figure (presumably Caesar). Engraved in the side a crowned figure and "1482". (this is probably an error; the year should be 1582 and the figure Pope Gregory XIII; the two figures would then be those lending names to universal calenders).

Ref: A Turner, p 196.

392 (KRONBORG 142:79). Seaman's tobacco box with calender and log table. Mid 18th century (g).

Dutch. 175x50x30. Oval shaped brass box with hinged lid. Samuel Morland's calender engraved in the lid. Log table at the bottom. Engravings as No 391.

Ref: A Turner, p 196.

393 (KRONBORG). Log. Mechanical. Taffrail.

Signed: C.G.Undén Helsingör.

c1850. (Patent obtained).

Brass register Dia80 L55 mounted in

steel stirrup on wooden semicircular base with radial lines for drift indication. Four dials with scales 1/2 to 1, 1 to 10, 10 to 100 and 100 to 1000. Brass rotator with four fins.

394 (KRONBORG 90:79). Log.

Mechanical. Taffrail.

Signed: H.HAECKE BERLIN. 1371.

c1880 (g) (firm established 1873).

Stirrup mounted brass register Dia95 H35. Two dials, concentric, both scales 0-50. Two rotators L245 with four fins of black lacquered brass. Template to control the shape of the fins.

395 (KRONBORG 71:84). Log.

Mechanical. Taffrail.

Signed: A/S GENTAS COPENHAGEN / BALTIC / SHIP LOG TYPE CL 1

c1920 (g).

Fly-wheel Dia90 on the axle of the register. Two dials, scales 0-9 Miles and 10-100 Naut Miles. Brass case Dia60 H55 mounted by brass bracket L170 fastened by wing nuts. Rotator L280, four fins Dia110.

396 (KRONBORG 80:84). Log.

Electric. "Ocean log".

Signed: A/S GENTAS OCEAN / Copenhagen Electric Log Type EL1 / Denmark

c1950 (g).

Rotator, log line, indicating transmitter for taffrail mounting. Transmission cables and connectors, indicating receiver.

397 (KRONBORG 58:84). Sundial.

Nautical.

Signed: B.COOK & SON / HULL

Mid 19th century (g).

Bearing sights and azimuth indicator. Brass disc Dia200, gimbal mounted, with rose graduated in 128 units. Eight cardinal points with fleur de lys at North. At the centre an equinoctial dial, adjustable for latitude north and south. The hour dial is graduated in roman numerals AM and PM. Slit for sun ray indication. Carrying handles. Hood cover.

Ref: Randier, p 150.

398 (KRONBORG 59:84).

Bearing dial.

Signed: W.Ludolph Bremerhaven

c1870 (g).

Brass plate Dia210 graduated 0-90-0-90° gimbal mounted in copper bowl with lid and carrying handle. At the centre, supported on two A-frames, is a pin-hole-wire sight in a tube. Above this is a bead and wire sight.

399 (KRONBORG 131:79).

Bearing dial. "Hutton's Pelorus".

Signed: KELVIN & JAMES WHITE Ltd & HUTTON

c1920.

Brass bowl with white opaque glass dial Dia200, scale 0-90-0-90° in 1° divisions. Built-in electric light with battery "Ever-Ready dry battery no 15", marked in ink "supplied May 1920". Central on the dial is a pillar H140, rotatable with slit and wire sights. Index pointing at the rose. Gimbal mounted in oak case 290x290x160 with compartment for battery 150x140x50.

400 (KRONBORG 60:84).

Bearing dial.

Signed: REYNOLDS & WIGGINS / TOWER HILL. LONDON E / 656

c1860 (g).

Square cast brass plate 235x235 has a circular cutout for compass rose Dia200 graduated 0-90-0-90°. Fleur de lys at North and an anchor marked "THE PALINURUS" at South. At the centre is an equinoctial dial, with adjustable latitude, hour scales XII-VI-XII-VI for north and south latitude resp. Gnomon missing. Gimbal mounting in two-piece mahogany case 260x260x220 fitted as heeling indicator marked "HEEL TO PORT" and "HEEL TO STAR". Marked on box also: "SHIP'S HEAD". The corners have ornaments cast in the brass.

401 (KRONBORG 56:84).

Bearing dial.

Signed: MIDDLETON & Co's PATENT POLARUS & COMPASS ADJUSTER HARTLEPOOL / BY H.M.'s ROYAL LETTERS PATENT

Mid 19th century (g).

Brass compass rose Dia300, 32 points, fleur de lys at North, stylized fish at East. Alidade with frame for wire H135 and threads for telescopic sight (missing). The compass rose can rotate in an octagonal brass plate 340 mm across. Gimbal mounted in octagonal wooden case marked "SHIP'S HEAD", and a heeling indicator (clinometer) is provided on the opposite side. H180.

402 (KRONBORG 129:79).

Bearing dial.

"Ship's Course Corrector".

Signed: BAIN & AINSLEY'S / COURSE CORRECTOR / No 2162

Mid 19th century (g).

White metal compass rose, graduated 0-180-0°, Dia215; gimbal mounted in mahogany case 260x260x160. A central

pillar H300, with arrows of oxidized brass at its foot marked "BEARING * DULL SUN" indicating on the compass rose, has at the top a pinhole-wire sight in a conical tube L175, and above that a slit and wire sight. Leather strap for transport.

Instructions in the lid for finding true course, magnetic course, course by North Star and course by rising and setting sun.

403 (KRONBORG 54:84).

Bearing dial.

Signed: CORN. KNUDSEN / KIØBENHAVN

c1900 (g).

White metal disc Dia182 graduated 0-180-0° and 0-180-350-0° and 0-90-0-90-0°. At the centre is a conical socket for sighting vane. Slit and wire sighting vane with mirror for reading scale, and Y-supports for telescope fit into the socket. Mahogany box 280x280x250 with conical socket at the bottom for holding the instrument. Spare socket as instrument support for external mounting.

404 (KRONBORG 132:79).

Bearing dial.

Signed: FREDERICK WIGGINS TOWER HILL LONDON

c1880 (g).

Brass dial with glued-on paper scale 0-90-0-90-0°. Variation scale in red print 45-0-45°. The rose has a fleur de lys at the North and at the South an anchor marked "THE PALINURUS". Central on the disc is an equinoctial dial with adjustable north and south latitudes. Pointer to indicate the azimuth: I-XII

"HOURS TO MER^{DN}" AND I-XII "HOURS PAST MER^{DN}". Gimbal mounted in square brass plate 240x240 which is the top of a mahogany box 270x270x220. The box is hinged as a cradle, forming a clinometer. Overall H400.

405 (KRONBORG 61:84).

Bearing dial. "Deviatometer".

Signed, on the dial: H. HUGHES & SON / IMPROVED COMPASS / DEVIATOMETER / 59 FENCHURCH ST / LONDON / No 318

c1900 (g).

White metal dial Dia205 with scale 0-90-0-90°. Gimbal mounted in wooden case marked at one side "SHIP'S HEAD". Central on the disc is a small equinoctial sun dial with slit-and-wire sight and adjustable for north and south latitude. Wooden box 300x300x130.

406 (KRONBORG 57:84).

Bearing dial. "PALINURUS".

Not signed.

c1900 (g).

"For finding the Deviations of Iron Ship's Compasses in any Latitude by means of the Sun or fixed Stars". Small rotatable equinoctial dial on compass rose Dia220, scale 0-90-0-90°, also scale for variation 45-0-45°. Lubber's line set at ship's head. Table for "APPROXIMATE DECLINATIONS FOR USE WITH THIS INSTRUMENT". Gimbal mounted in octagonal wooden case 260 mm across. H220 plus lid H130. Heeling meter at the gimbal with indication on the outside of the case. Dials are blue (enameled) with white text. Instructions on label in the lid.

407 (KRONBORG 130:79).

Bearing dial.

Signed: HEATH'S LONDON

POLARIS / 567

c1900 (g).

Small equinoctial Dial115, hour scale to 5 min with folding slit and wire sight. Rotatable on brass compass rose Dia200 with scales 0-180-0° and 0-90-0-90°. Gimbal mounted in mahogany box 260x260x200. Overall H350 including lid.

408 (KRONBORG 48:84).

Azimuth circle.

Signed: CORNELIUS KNUDSEN

KJÖBENHAVN

c1900 (g).

To place on compass. Aluminium Dia205, scale 0-180-0° in 1° divisions. Slit and wire sight vanes for astronomical and terrestrial observations. Wooden box 280x280x80.

409 (KRONBORG 67:84).

Bearing instrument. Incomplete(?).

Not signed.

Second half 19th century (g).

Three turned mahogany legs are screwed into a brass ring L175. The ring contains a gimbal mounted wooden plate Dia130 H26, balanced by a lead sphere Dia35 below. A brass cylinder Dia115 H70 with brass lid holds a gimballed wooden plate Dia110 with a brass balancing weight. On the wooden plate is a hand drawn circular paper scale 0-180-0°. This brass cylinder is possibly to be placed on the first mentioned gimballed wooden plate, but the purpose is not clear. Wooden box 210x210x65. Sliding lid.

410 (KRONBORG 47:84).

Bearing dial.

Not signed (probably made by Cornelius Knudsen, Copenhagen).

c1900 (g).

Circular glass plate in brass ring Dia195 with central pivot for placing on ship's compass. The ring is graduated 0-180-0° and N, Ø, S, V. Slit and wire sight with connecting shadow cord L170; black line on white painted brass diameter to coincide with shadow cast by the cord.

411 (KRONBORG 105:79).

Dividing disc (?).

Not signed.

Second half 19th century (g).

Brassplate 230x223, 3 mm thick has a 3 mm high circular elevation partly in oxidized brass with five concentric circles. In each of these are 60 small holes. Diameters of the circles are: 218, 184, 148, 118, 85. The purpose is not known.

412 (KRONBORG 66:84).

Sight vane (?).

Not signed.

c1800 (g).

Brass base Dia150 with balusterturned pillar with brass tube Dia40 L400 mounted on universal joint. No lenses or sights extant. Purpose unknown. Marked: No 127

413 (KRONBORG 103:79).

Sight vane for compass.

Not signed.

Second half 19th century (g).

Oxidized brass. L260. Slit and wire sights. Mirror for reading compass.

414 (KRONBORG 45:84).

Sight vane for compass.

Not signed.

Second half 19th century (g).

Brass index L245 with a pivot to be located in central hole of a compass glass. The opposite end of the index has a foresight, and a central pin with green shade is backsight. Marked: "Capt. C. O. Larsen".

415 (KRONBORG 53:84).

Bearing dial.

Signed on the sight vane: STEGER Jr / KIEL / 2720

Signed on the spoke: VORN / 0 / STEGER Jr / 2589

c1900 (g).

Heavy cast brass ring external Dia213, internal Dia140, H21. Oxidized brass spoke with slit and wire sight vane, mirror, two grey filters. The ring has scales 0-360°, 0-8-0-8-0 and 0-360° repeated on the vertical outer side of the ring.

416 (KRONBORG 137:79).

Bearing dial.

Signed: H.E.HOLST / KJÖBENHAVN c1860 (g).

Wood Dia255 H15. Three turned feet. Ring shaped paper scale 0-90-0-90°, external Dia225, internal Dia170. Inside this is a concentric rotatable disc with a 64 point compass rose and scale 0-90-0-90°. At the centre is a H115 brass gnomon.

417 (KRONBORG 128:79).

Bearing dial.

Signed on two of the spokes: I.L.HOLT 0 TØNSBERG

c1900 (g).

Four-spoke brass ring external Dia200, internal Dia162, graduated 0-180-0° in

1° divisions. Brass sighting vane with slit and wire sights, L175. Gimbal mounted in wooden case 265x265x175. Lid missing. Leather strap for transport.

418 (KRONBORG 52:84). Protractor. Folding arm.

Signed on the spokes: Troughton London

c1830 (g).

Brass. The divided circle on a four-spoked ring is cut on the circumference with gear teeth meshing with the adjuster on an arm perpendicular to two limbs with folding pricks on open-work arms. Scale 0-360° with vernier. Outer Dial 54, inner Dial 32. Shaped mahogany box Dial 75, H30.

419 (KRONBORG 46:84).

Bearing dial. "Azimuth circle".

Signed: CORN. KNUDSEN / KØBENHAVN (catalogue no 60)

c1920 (g).

To place upon ship's compass. Aluminium ring, two spokes, outer Dia 200, inner Dia 172. Divided 0-180-0° in 1° divisions. Aluminium sight vane with slit and wire sights, white with black line to coincide with shadow from cord connecting the sights. Wooden box 273x232x58 with sliding lid.

420 (KRONBORG 125:79).

Azimuth mirror. "Clausen's".

Signed: C.CLAUSEN'S CONSTR No 62 CORNELIUS KNUDSEN KBHVN
c1920 (g).

Oxidized brass. Extendable to fit any size of compass. Spring loaded pinion for compass glass centre. Folding sight vane. Spirit level. Wooden box 200x100x80.

421 (KRONBORG 115:79).

Course-magnifier. "Clausen's".

Signed: C.CLAUSEN'S CONSTR 32 / CORNELIUS KNUDSEN

c1920 (g).

Oxidized brass frame 120x60 with semi-circular lens Dia 100 to be placed on the steering compass in such a way that the lubber line and the adjacent part of the compass card is magnified. Wooden box 165x165x55 with sliding lid.

422 (KRONBORG 100:79).

Bearing dial.

Not signed.

Late 19th century (g).

Brass dial Dia 85, gimbal mounted, lead weighted. Compass rose with 64 points. Y-supports for telescope. Fruitwood base 96x81. Overall H144.

423 (KRONBORG 101:79).

Azimuth circle to place on the ship's compass.

Not signed.

c1900 (g).

Glass plate in brass ring Dia 225, scale 0-180-0° in 1° divisions. Brass sight vane with slit and wire sights L200. Wooden box 260x245x80 with sliding lid.

424 (KRONBORG 88:79).

Bearing dial. "Clausen's".

Not signed.

c1900 (g).

Brass ring, Four spokes, outer Dia 205, inner Dia 160. Scale 0-180-0° in 1° divisions. Deviation indicator. Sight vanes, slit and wire sights, for astronomical observations and Y-supports for telescope. Wooden box 243x243x150. Made by Cornelius Knudsen, Copenhagen (catalogue no 82).

425 (KRONBORG 49:84).

Alidade for plane table.

Not signed.

c1800 (g).

Brass rule 470x42, H6. Engraved scale.

Brass sight vane with double slit and wire sights for forward and reverse sighting. Hinged at the middle of the rule is a telescopic sight, brass tube Dia25 L455. Two-lens eye piece, focusing by slide knob on the outside of the tube. Cross wires.

426 (KRONBORG 108:79).

Bearing dial. "Captain Clausen's".

Signed: C.CLAUSEN's CONSTR / CORNELIUS KNUDSEN KØBENHAVN

c1900 (g).

Brass ring Dia253 with 10 spokes. Silvered scale with 64-point compass rose and graduation 0-360° and 0-90-0-90° in 1° divisions. Two sight vanes, one with slit and wire sights and one with Y-supports for telescope or binocular. Mahogany box 300x300x115 with conical socket for support.

427 (KRONBORG 51:84).

Bearing dial.

Signed: LILLEY & SON / LONDON

c1830 (g).

Brass Dial70 with scale 0-90-0-90° in 1° divisions and 128 compass points. Sight vane with slit and wire sights, H130. Teak box 295x295x158; lid missing.

428 (KRONBORG). Compass rose.

Trade label on box: "KELVIN BOTTOMLEY & BAIRD LTD. GLASGOW."

c1880 (g).

Paper. Print on thin paper, 128-point compass rose Dia260. Fleur de lys at

North marked "LORD KELVIN'S PATENT". Wooden box 283x283x35.

The box has presumably contained a white-metal printing plate, as a note in Danish by Cornelius Knudsen states: "MODEL CK S 1. As the model is made of white-metal, and therefore breaks easily, it should be treated with great care"

429 (KRONBORG 100:84).

Bearing sights

Not signed.

Late 19th century (g)

L200, H105. Slit and wire sights mounted in gimbals, supported in a mahogany frame 220x153x160 with a glass sphere Dia100 containing a magnetic compass, scale 0-90-0-90°. Purpose not known. (Deviation meter?)

430 (KRONBORG 192A:38). Compass.

Tell-tale.

Signed, printed on compass rose:

ANDRADE TELL-TALE COMPASS / 17 BATTERY PLACE / NEW YORK / PAT.AUG.13 1918

Signed, brass plaque on side of the box: ANDRADE / TELL-TALE COMPASS / NEW YORK CITY NEW YORK / PAT.AUG.13 1918 / No 167 / MADE BY / E.S.RITCHIE & SONS / BROOKLINE MASS

c1930 (g).

Black lacquered brass bowl in gimbals; mahogany case 390x390x340 with circular window in the lid. Electric connections for remote alarm. 128-point compass card, 0-360° in 1° divisions.

431 (KRONBORG 43:84).

Bearing compass.

Signed, engraved in the alidade:

D.Filby / Hamburg

Signed, print on compass card:

H.PETERSEN / ALTONA

c1800 (g) (fl 1780-1820).

Brass bowl Dia200, gimbal mounted in mahogany box 300x300x270. 64-point dry compass card, scale 0-90-0-90°. Brass sights, slit and wire L195 H100 with magnifying lens.

432 (KRONBORG). Bearing compass.

Signed on compass rose: IVER WEIL-

BACH / KIÖBENHAVN

c1900 (g).

Brass bowl Dia205. Gimbal mounted in mahogany case. 64-point compass rose, fleur de lys at North and ornament at East. Sight vane with slit and wire sights H170 L210. Sighting line along the Y-shaped alidade with angle mirror and magnifying lens for reading compass. Height adjustable pinhole in the near sight.

433 (KRONBORG 29:84). Compass.

Marine. Tell-tale.

Signed, engraved at the side of the bowl: Ferd. Wedel-Jarlsbergs / Patent Kontrol Kompas / B No 7

c1900 (g).

Brass bowl Dia157, gimbal mounted. A number of small holes in the compass card allow lead shots to fall into marked compartments below, permitting later course control. A brass funnel and tube above the compass is filled with the shots, which at certain intervals are released by a spring wound clock.

434 (KRONBORG 74:84). Compass.

Marine.

Signed on compass card: D.B.SELTER / AMSTERDAM

c1800 (g).

Wooden bowl Dia200 H95. Dry card. 64 points and 0-90-0-90°. Fleur de lys at North. Defective.

435 (KRONBORG 211:58). Compass. Ornamental.

Signed on compass card: Rasmus Kock i Kiöbenhavn

Second half 18th century (g).

Wooden bowl with carvings, painted black, gold and red. Brass gimbals with suspension chain. Dry card Dia140. Black print with foliage.

436 (KRONBORG 113:79).

Lodestone.

Not signed.

Second half 18th century (g).

Fitted into wooden box 100x50x90.

437 (KRONBORG 131:68). Compass.

Marine. Dry.

Signed on compass card: CARL CHR. BRAM / HELSINGÖER

Second half 18th century (g).

Brass bowl Dia175. Gimbal mounted in defective wooden box 240x235x145 with sliding lid. 32-point compass card with fleur de lys at North and "S"-ornament at East.

438 (KRONBORG 116:79).

Compass card.

Signed: SMITH & RAMAGE / ABERDEEN

Mid 19th century (g).

Dia170, graduated 0-90-0-90°. 64-points dry card, fleur de lys at North with two magnets parallel fastened to the upper side of the card. Mahogany box 225x225x50.

439 (KRONBORG 154:55). Compass.
Portable.
Signed at one corner of the basis: I G H
Early 19th century (g).
Brass. Base 85x85 with Dia68 dial H16.
At the bottom engraved 16-point rose
and 0-90-0-90° in 1° divisions. A star
engraved at North. Leather covered
box 100x96x30 lined with red velvet.

440 (KRONBORG 65:51). Compass.
Portable.
Signed on compass rose: PETER BERG
/ I KIØBENHAVN
c1800 (g).
Brass bowl Dia68 H27 including lid. 32-
point black and white rose.

441 (KRONBORG 144:79). Compass.
Chinese. Geomantic.
Not signed.
Late 19th century (g).
Octagonal wood (probably boxwood),
124 mm across. Compass in brass frame
Dia21. White (bone?) compass face
with red diameter. Circles and radii
with chinese characters. Fitting octago-
nal cover, also with chinese writing.

442 (KRONBORG 94:79). Compass.
Spirit. Marine.
Signed: H.E.HOLSTS EFTF Kjöben-
havn
Late 19th century (g).
Dia43 in mahogany case 120x120x74.
64-point compass card, English text.

443 (KRONBORG 51:64). Compass.
Dry.
Signed on card: By FRANS MEYJES
JEREMSZ / te Amsterdam
c1800 (g).
Wooden bowl, Dia127. Primitive paper
card, 32 points. H80.

444 (KRONBORG 83:84). Compass.
Dry.
Signed on card: L.KIRKEBY /
KJØBENHAVN
Mid 19th century (g).
Wooden bowl. Dia120 H90. 64-point
compass card.

445 (KRONBORG 34:84). Compass.
Dry.
Signed on card: Stie Bang i Kiöben-
havn
Late 18th century (g).
Wooden bowl. Dia122 H90.
Turned lid H22. Painted green, gold,
black. Compass card, 32 points. Fleur
de lys at North.

446 (KRONBORG 124:79).
Thermometer.
"Rung's vendetermometer".
Signed: CORNELIUS KNUDSEN
KBHVN
c1900 (g).
Dia25 L340. Glass thermometer in
lacquered brass cover with mounting
bracket hinged at the middle. For tem-
perature measurements at sea. The
thermometer is lowered in the normal
position, i.e. with the mercury bulb be-
low. At the desired depth a weight is
released, descending along the line
and causing the thermometer to turn,
whereby the mercury column breaks
allowing the temperature to be read
after securing the thermometer.

447 (SORØAKAD 554 A).
Level. Surveyor's.
Signed: CORNELIUS KNUDSEN
KIØBENHAVN
c1900 (g).

Oxidized brass tube, Dia25 L260. Spirit level above tube. Crossed wire in the optical system. Adjustable to horizontal by finger screw and spring in brass mounting frame. Mounting on tripod by 1 inch threads and four adjusting screws. Mahogany box 310x160x85.

448 (KRONBORG). Galvanometer. Duplex.

Made by: GN Store Nord AS, Copenhagen.

Signed: St.N.T.S. FABRIK / KJÖBENHAVN / No 54116

1922 (inf, serial number).

Polished mahogany ogive case 130x65x185. Silvered dial Dia90 behind glass. Central pointer. Scale 70-0-70. Four terminal screws at the rear. Differentially wound coils for use with automatic simplex-duplex repeater for landlines differential duplex system on telegraph lines. GN model 902.

449 (KRONBORG). Binnacle.

Signed, brass plaque on the binnacle: LORD KELVIN'S PATENTS / (SIR WILLIAM THOMSON) / No 7464 / SOLE MAKERS / KELVIN & JAMES WHITE LTD / 18 CAMBRIDGE ST / GLASGOW.

c1900 (g).

Brass Dia400 H500. Oval window 230x165. Mahogany stand 860x500x750. Two iron compensating spheres Dia230. Compass, brass bowl. 128-point paper card, scale 0-90-0-90°, Kelvin type with eight light magnets attached to the open card with silk cords. Overall H1250

450 (KRONBORG 166:79). Sounder. "Capt. C. Clausen's Patent".

Signed: Cornelius Knudsen / Marine Optician / Copenhagen / No 1079 c1910 (g).

Test apparatus. Glass tube mounted in casing of cylindrical green painted metal Dia45 L700. This is lashed to four shaped iron rods forming a carrying frame with an eye for suspension at the top and a lead weight at the bottom. Brass scale 9-250 FATH marked 1079. Overall L1100. Accessory: pulley with thin steel wire for lowering the sounder to the bottom of the sea.

451 (KRONBORG 161:79). Sounder. "Capt. Clausen's Patent".

Not signed. (Probably made by Cornelius Knudsen, Copenhagen). c1900 (g).

Pressure sounding instrument. Brass case Dia45 L800 with mounted glass tubes. Scale 10-70 FVN (Favn: Danish, = 1,883 metre. Compare fathom).

452 (KRONBORG 162:79). Sounder. "H. Rung's Patent".

Not signed.

c1900 (g).

Pressure sounding instrument. Brass case Dia40 L800 with mounted glass tubes. Scale 10-120 FVN (see item 451).

453 (KRONBORG 168:79). Sounder. "Capt. Clausen's Patent".

Signed on brass plaque: CORNELIUS KNUDSEN KBHVN

c1900 (g).

Pressure sounding instrument. Brass case Dia45 L800 with mounted glass tubes. Two scales "Gamle og nye Favne", (old and new fathoms).

454 (HAUCHCOL 510, AWH F54).

Microscope. Compound chest microscope.

Not signed (Probably made by Nairne, London).

c1790 (g).

Nairnes version of the Cuff microscope. Rectangular pillar hinged to the bottom of the mahogany case and at the top supporting the tube by a bracket with ring support. Cruciform stage on sliding shoe with clamp and fine adjustment (Hevelius) screw. Tube Dia25 and Dia40 L170 with screw fit collars for eye piece and field lens. The cylindrical snout has marks for positioning the Lieberkuhn to match the objective focus. Concave mirror on rotatable arm at base of the pillar. Bonanni's sprung object holder missing. Various accessories: five objectives, lieberkuhn, fish plate, object needle, tweezers etc, but some parts missing. Mahogany case 330x130x160 lined with green velvet.

455 (HAUCHCOL 511, AWH F55).

Microscope. Compound. Cuff type.

Signed, engr in the stage: Ring / a / Berlin

1787.

Mounted on square wooden case 160x160 with drawer for accessories is a vertical brass pillar. Along this slides another pillar which may be clamped to the first and fine adjusted by screw. A bracket with ring supports the tube Dia25 and Dia45 L205. Eye piece with dust cover. Six objectives. Cruciform stage with holes for fitting accessories. Plano-concave mirror mounted in stirrup. Adjustable stage condenser. Screw fit lieberkuhn. Bonanni spring object

holder. Frog plate. Glass micrometer. Ivory mounted objects etc. Hand written accessory list dated 26-5-1787. Some parts missing. Pyramidal wooden case with handle, door, lock and key.

456 (SORØAKAD 512). Microscope. Compound.

Signed: Microscope achromatique Universale / de / Charles Chevalier / Ingénieur, Opticien, Bréveté / Palais Royal 163 à Paris.

c1840.

Achromatic. Mounted on mahogany box 330x240x95 with drawer. Screw plate on the case for brass pillar. Joint to horizontal bar. Square cross section racked limb, which can be clamped parallel to the column, supports a sliding shoe for plano concave mirror. Stage missing. Horizontal tube Dia30 L170 with prism. Push fit eye piece. Coarse focus with clamp and long adjusting Hevelius' screw for fine focus. Extra eye piece. Lieberkuhn mirror and other accessories.

457 (HOFMANSG). Microscope.

Compound.

Signed: Ernst Leitz i Wetzlar / Cornelius Knudsens Etablment / Kjøbmagergade 15, Kjøbenhavn. / Nr 5443, dated 9 October 1900.

c1900.

Black painted U-shaped base. Circular cross section pillar with built-in fine adjustment of focus, 0-50. Brass bracket supporting the tube Dia30 L190 with rack and pinion coarse focus. Circular stage Dia100 with clips. Three eye pieces. Overall H310. Mahogany case 360x185x175.

458 (HOFMANSG). Level. Surveyor's.
Not signed.

Late 19th century (g).

Brass. Tube Dia20 L155. Brass base with two screws for fitting to universal staff joint. Levelling by adjusting screw acting against a spring on the tube. Mahogany case 185x160x70.

459 (HOFMANSG). Microscope. Solar.
Signed: Dollond / London
c1820 (g).

Brass. Window plate 120x120. Mirror 190x60; position adjusted from inside by two wing screws. Tube Dia36 L130 screws on to the centre of the plate. Condenser. Six objective lenses in brass frames. Accessories. Fitted mahogany box 310x160x70.

H.C.Andersen is said to have used this microscope during visits, and this should have inspired him to write the story: "Vanddråben" (A Drop of Water).

460 (HOFMANSG). Level. Surveyor's.
Signed: F.A.THIELE / KØBENHAVN
c1900 (g).

Oxidized brass. Tube Dia30 L325 mounted on heavy frame with level adjusting screw. Dust cover. Spirit level above. Tripod with three level screws. Rack and pinion focusing. Fitted wooden box 365x200x160.

461 (HOFMANSG). Balance.

For butyrometer.

Signed: FERD.F.SØRENSEN /
KJØBENHAVN

c1910 (H.Struers, Copenhagen catalogue).

Determination of water content in butter. Iron base 130x90. Iron stand H190. Unequal brass arms balanced by inverted U shaped brass riders placed in

notches on the long arm. Silvered pan Dia65 H32 placed in stirrup hanger. Wooden box with tweezers, glass spatulas and riders.

462 (HOFMANSG). Thermometer.

Bimetallic.

Signed: Ductu Urban Jürgensen /
N.E.Hofman fecit

1826 (letter from U.J.).

Brass ring Dia85 has circular silvered scale 35-0-80 in units of 1, apparently degrees Reaumur. Measuring element is a U-shaped steel-brass bimetal spring, linked to a brass sector geared to a pinion with the pointer. This is pushing on two pointers to maximum and minimum indication respectively. Zeroing screw between the bi-metal and the sector. The instrument is mounted on a green pillar Dia35 H215 and protected by a glass dome Dia110 H240.

Description of Urban Jürgensen's bimetallic thermometer was presented to the Danish Royal Society in 1825, and at the most 200 were produced, very few still extant. This specimen is made by the heir of the estate Hofmansgave, Niels Erik Hofman (1803-86), who spent about 19 months (1824-26) in Jürgensen's shop as part of his education.

463 (HOFMANSG). Microscope. Compound.

Signed: Microscope achromatique
Universale / de / Charles Chevalier /
Ingénieur, Opticien, Bréveté / Palais
Royal 163 a Paris.

c1840.

Achromatic. Mounted on mahogany box 330x240x95. Screw plate on the case for brass pillar. Joint to horizontal

bar. Square cross section racked limb which can be clamped parallel to the column and supports a sliding shoe for plano concave mirror and stage. Horizontal tube Dia30 L170 with prism. Push fit eye piece. Coarse focus adjustment with clamp and long adjusting screw for fine focus. Extra eye piece. Lieberkuhn mirror and other accessories.

464 (HAUCHCOL 167, AWH C17).

Magic cup.

Not signed.

c1800 (g).

Green glass beaker Dia70 H100 is at the bottom connected to a glass flask Dia70 H110 by a narrow (Dia~5) opening. Glass foot Dia85. The lower flask is surrounded by a turned wooden cover, in two parts (defective) Dia115 H230. Purpose: a fluid of small density (wine) is poured in the lower flask, and water in the upper cup. The two fluids will slowly change place: magic, the water turns to wine!

Ref: Hauch, vol 1 p 129, pl 23 fig 10.

465 (HAUCHCOL 185, AWH G122).

Manometer. Otto v Guericke's.

Not signed.

c1800 (g).

Air density indicator. By Hauch also named "Dasymeter". A small Dia25 solid brass sphere is on a brass balance in equilibrium with a larger Dia80 hollow brass sphere. Beam L135. It is supported on a brass pillar H200 on a brass foot Dia70. To be placed under a bell jar; during evacuation the larger sphere will descend caused by loss in buoyancy. Ref: Rosenberger II, p 148. Cf. item 466.

466 (HAUCHCOL 184, AWH).

Barometer. Otto von Guericke's.

Not signed.

c1800 (g).

T-shaped wooden frame H1050 L900 supports a wooden balance beam L960. At one end, arm L250, is suspended a large metal sphere Dia640, whereas the other end of the beam, arm L700, supports a weight of small volume (missing), and is provided with a pointer, indexing on a 20-0-20 brass scale. Equilibrium depends on the buoyancy of the atmosphere. Cf item 465.

Ref: Hauch, vol 1 p 138, p 125 fig 8.

467 (HAUCHCOL 195, AWH G44).

Barometer. Huyghen's, for two liquids.

Signed: BAROMETRE / HUGENIANE
Anton Molinari / Kiöbenhavn

c1800 (g).

Oak base 960x120. Brass scale 2-27. Danish text. Memory pointer on brass wire.

468 (HAUCHCOL 186, AWH G42).

Barometer. Cistern.

Signed: A.Molinari Kiöbenh

c1800 (g).

Oak 1000x110. Channeled pediment. Exposed glass tube; bulb cistern cover opens as a door. Scale (tin?) with Danish text, 27-29 inch. "Ustadigt" (change) at 28 inch.

469 (HAUCHCOL 192, AWH).

Barometer. Siphon.

Signed: A.Molinari Kiöbenh.

c1800 (g).

Mahogany 960x105. Channelled pediment and base. Scale at upper leg 27-29 inch, marked: "Pariser Maal" (Paris measure). Danish text with "Ustadigt"

(change) at 28 inch. Scale at lower leg 27-29 inch with Danish text. Glass tube is replacement.

470 (HAUCHCOL 196, AWH G45).

Barometer. Diagonal, Morland's.

Not signed.

c1800 (g).

Double angle. Wooden base, painted red with golden edges. Text in French, German and Italian. Scale 48-0-48 with 0 at the middle marked "variable". Thermometer L310, scale 45-0-80 marked "Thermometre" and other markings, in part illegible, on the scale.

Marked on lacquered paper: MAGNUM BAROMETRUM / MORLANDINUM

471 (HAUCHCOL 618, AWH).

Thermometer. Drebbel's.

Signed: A. Molinari f. / Kiöbenhavn.

Thermometrum af Drebel

c1800 (g).

Invented c1600, open at the bottom (as a bulb cistern of a barometer) and with a closed bulb at the top. L810. Mounted on a painted pine plate. 890x102. Rounded top and bottom. Scale, painted in black on the wood (from top down) 10,5,0,10,15 20,25,30. Danish text, at 0 "Fryse-Punct", at lower 10 "Tem-pereri", at 15 "Syge-Stue", at 17 "Driive-Huus", at 19 "Silke-Orme", at 26 "Kiöben...1750".

472 (HAUCHCOL, AWH G41).

Barometer. Bulb cistern.

Signed: A. Molinari Kiöbenh

c1800 (g).

Wooden plate 920x110. Exposed glass tube, removable rectangular cistern cover. Rounded pediment. Metal scale

(tin?) with text in Danish, 27-29 inch with "Ustadigt" at 28 inch.

473 (HAUCHCOL 193, AWH G50).

Barometer. Siphon, De Luc's.

Signed: Rénard á / Copenhagen

c1790 (g) (Rénard moved to

Stockhom 1795).

Portable mountain barometer. Mahogany base 940x55. The short, lower branch L280 is closed by an ivory collar with a threaded ivory stopper. Brass scale for the long branch 428x10 "Pied Francais", 192 to 360 and 16-30 in 1/12 divisions. Thermometer marked "Reduction selon Deluc" -25 to 40 in 1 deg divisions.

474 (SORØAKAD 191). Barometers.

Two. Siphon.

Signed: J. NISSEN / N21 (N27 resp).

c1850 (g).

Mahogany plate 940x50. Brassbound glass U-tube. The long branch is surrounded by a wider glass tube with engraved graduation 26-30 in 1/2 (inch) divisions. Brass collar with vernier. Brass fitting below holds another glass tube surrounding the short branch, which also has a long point to be lowered to contact the mercury surface. Thermometer L180 with ivory scale marked "No 21: IN R" -20 to +50° R in 1° R divisions. The other is marked "No 27" and is graduated in °C, -10 to +60.

475 (private). Clinometer.

Not signed.

c1900 (inf).

Conifer, rectangular isosceles triangle about 1x1x1.4 metres with an arc acting as strut as well as scale for a plumb bob.

By placing the hypotenuse on the wall of a ditch, the position of the bob is a measure of the slope. Used at a large manor. Probably locally made.

It is perhaps debatable whether this a scientific instrument, but it is a very good example of the application of an instrumental principle for rural purposes.

476 (BORREBY). Calliper.

For measuring diameter of a tree.

Signed: E.ESCHER / KEMPTEN BAY-ERN

c1900 (g).

Boxwood with jaws of iron. Graduated inches and millimetres. L1200.

477 (BORREBY). Telescope.

Refracting, terrestrial, binocular.

Signed: EMIL BUSCH A-G / RATHENOW / NR 1130

c1900 (g).

Dia50 objectives. Mounted on heavy iron tripod.

478 (private). Lunarium.

Signed, cast in iron foot: 5 S & S

c1900 (g).

Cast iron and brass. 500x200x300. Cast iron ornamented circular base and pillar with expandable stem. Central candle, brass circular reflector. Gear mechanism to earth globe Dia60 and moon.

479 (private). Height meter.

"Løvengreen's" for determining the height of trees etc. (forestry).

Not signed.

c1900 (g)

Horizontal brass bar L600 with brass upright H260 sliding along a white scale with black writing. The principle is that of the cross-staff. Three scales 0-30,

0-15 and 0-45 on the horizontal beam. Pinhole sights and spirit level. Two supporting wooden legs bring the instrument to eye-height. Wooden box, fitted.

480 (SVENGYMN). Polarimeter.

Saccharimeter.

Signed: Franz Schmidt & Haensch / Berlin S / No7324

Late 19th century (g).

Cast iron H-shaped base with two A-supports of a tube Dia40 L270 in which is placed a glass tube Dia12 L200 with brass ends with windows for sighting along the tube. Optical polariser and analyser adjustable by screw rod. Overall H400.

Ref: Blondel, p 126: Laurent's polarimetre.

481 (NATIONAL D127/1992).

Viking sun compass.

c1000 (based on Carbon-14 test of finds in the same layer).

Fragment found in Uunartoq in Greenland. Conifer. Half-moon shaped Rad~35 L70 H9. Central (half) hole Dia~18. Along the arced edge are 18 notches and 17 points.

Believed to be part of a total circle with 36 points. The centre hole to be for a gnomon. Scratches in the wood resemble shadow lines cast by the sun on the gnomon.

Ref: Thirslund IV

482 (SVENGYMN). Camera obscura.

Not signed.

Late 19th century (g).

Sheet metal case 220x180x160 on four small claw feet, painted gold bronze. Lens Dia45, push focusing. Mirror set

at 45°. Hinged sheet metal lid opens to reveal horizontal opaque glass plate about 180x160.

483 (SVENGYMN).

Centrifugal machine.

Signed: STRUERS

c1900 (g).

Cast iron frame, which may be positioned vertically H500 on H-shaped base 230x180, or horizontal. Supports cast iron drive wheel Dia220 with wooden handle and belt drive to Dia35 pulley with axle on which to place accessories: (a) Armillary sphere of two steel hoops fitted on steel rod, to demonstrate the flattening of the earth at the poles. (b) Boxwood U-frame L300 with two brass spheres on a brass rod to demonstrate angular momentum. (c) Boxwood rotating arm with candle (old bicycle lamp) to demonstrate fictive gravitational field in rotating frame. (d) Glass flask Dia85 on brass mounting to demonstrate fluids behaviour by rotation. (e) Boxwood bar rotating around one end, with glass tube containing mercury mounted as see-saw

484 (SVENGYMN). Globe.

Black, for sketching with crayon.

Not signed.

c1880 (g).

Wooden frame. Curved triangular base with compass. Brass meridian ring graduated 90-0-90. Brass hour scale at North. Wooden horizon ring with paper zodiac, showing constellations, months, dates, compass directions. Two scales of dates, one showing each month having 30 days, and one following our calendar. The globe can be tilted for latitude adjustment.

485 (SVENGYMN).

Electrostatic generator. Wimshurst induction type.

Signed: VOLTANA

c1900 (g).

Wooden base 320x270. Overall H370.

Ebonite discs. Two glass Leyden jars.

486 (SVENGYMN). Resistance box.

Signed: RUHSTRAT AG /
GÖTTINGEN

c1900 (g).

Oak case 250x150x140 with marble top. Brass conductors with eight keys (0.1 to 4 ohms). Two extra keys for use as voltage divider.

487 (SVENGYMN). Morse receiver.

Signed: DIGNEY FRÈRES / PARIS
/R^{TES} S.G.D.G.

c1860 (g).

Mahogany base 350x190. Overall H455. Two coils. Paper reel. Brass housing for spring driven clock. Circuit breaker.

488 (SVENGYMN). Microscope.

Compound.

Signed: A.BARDOU / PARIS

Mid 19th century (firm established 1818).

Black U-shaped base 90x70, Brass tube Dia25 L170. Huyghen's ocular eye piece. Nose piece fits into brass bush screwed into bracket, which is adjustable for focusing. Three small objectives screw into each other. Rectangular stage with clips for object glasses. Substage concave mirror in stirrup. Pillar with joint for tilting. Fitted mahogany box 285x120x85.

489 (SVENGYMN). Leyden jars.

Three.

Not signed.

Mid 19th century (g).

Bottles with square section bodies. Two 75x75 H185, one 65x65 H270. Black glass with tin foil. Brass stoppers, one with sphere Dia30.

490 (SVENGYMN). Electroscope.

Not signed.

Late 19th century (g).

Cast iron base Dia115. Glass sphere Dia170 fastened to the base by sealing wax. Brass fitting at top. New aluminium blades. Overall H280.

491 (RUNDETRN C1-14). Globe.

Celestial.

Signed: HIMMELSGLOBUS / neu entworfen 1805 / Weimar / im Geogr. Institut c1805.

Dia105. Brass meridian, divided 90-0-90°. 12 gores. Equator, ecliptic. Hour circle 1-12 twice. Pasteboard box (hardly original) Dia138 H136.

492 (RUNDETRN C1-3). Globe.

Celestial. "Francois de Montgenet's".

Signed: ILLVUSTRIS / AC REVER / D.D.C.L.A / BAVMA / ARCH BIS ELEBORABAT / FRANCISCVS DE / MONGENET V / CUM priuilegio / Pon Max Sgs Ven 1560 (inf).

Dia83. Turned wooden base Dia75. Baluster shaped pillar. Overall H155. 12 paper gores, meeting at the ecliptic poles. Equator divided 0-360° in 1/4° divisions. Tropics of cancer and capricorn. Pasteboard cylindrical case Dia88 H167.

The original copper prints were in 1927 mounted on the wooden sphere, and on the wooden base. (Unmounted prints in London, Milan and Paris)

Ref: Krogt, p 199.

493 (RUNDETRN C3-5). Globe.

Planet of Mars.

Signed in cartouche: ELYSIUM / Globe Géographique / de la Planète / MARS / CAMILLE FLAMMERION / par E.Antoniadi / E. Bertaux. Editeur, Paris

Mid 19th century (g).

Dia150. Turned wooden base and baluster shaped pillar. Overall H290. 12 gores 0-70° and polar caps.

494 (RUNDETRN C2-10). Globe.

Terrestrial.

Signed in cartouche: GLOBUS TERRESTRIS / Sinna cura et ita elaboratus ut non modo clariss Cookn sed etquae debennis Dixsonio innuenta (?) conspiciatur. Venatis prostat Norimbergae apud Ioanem Georgium Klinger Anno 1790 1790.

Plaster sphere, damaged. 12 gores 0-70° latitude, polar caps. Equator.

Ecliptic. Tropics of Cancer and Capricorn. Arctic and Antarctic circles. Cook's travel 1777. Wooden stand, Dutch style, four baluster turned pillars, wooden cross with circular plate-Dia140. Wooden horizon with paper showing months, zodiac, compass points and degrees. Brass meridian 0-90-0°.

495 (RUNDETRN C1-4). Globe.

Celestial.

Signed on cartouche: Atlanti Acad UPS. Scientiarumg. R.R.SS. Col.Nom.

el Escellenit cum Domini Dom C.EHRENPREUS hunc Globum Coelestrem E.C.Flamsted Calat.....llssimis De la Cailli observa...tas Cos...og Ups...Terpiete Åkerman Scient Sculpture 1759. 1759.

White with dotted constellations. Dia280. Brass meridian 0-90-0°. 12 gores +24 to -24° latitude, polar caps 0-24°. Equator 0-360°. Ecliptic 12 times 0-30° divisions. Brass hour circle with pointer, 1-12 twice. Wooden stand, Dutch type, four baluster turned pillars on a wooden cross. Central support for meridian ring. Octagonal horizon, 430 across with months, zodiacal signs, degrees and dates. Overall H450.

496 (RUNDETRN C1-13). Globe. Celestial.

Signed: BERLIN / GEOGR artist Anstalt / von / Ernst Schotte & Co / Lith Anst. v. Th.Mettke, Berlin. Second half 19th century (g).

Non-magnetic metal. Dia235. Brass meridian ring, 90-0-90°. 12 gores +66 to -66° latitude, polar caps. Equator, ecliptic, tropical and arctic circles. Wooden horizon with months and two scales of dates, one following the calendar and one with 30 days each month. Zodiacal signs with German text. English type base, wooden tripod, baluster turned pillar, compass on swing-out arm. Copper hour circle at south pole.

497 (RUNDETRN C4-9).

Armillary sphere. Educational.

Signed in cartouches: VERLAG / VON / ERNST SCHOTTE & Co / Berlin W. / Schul-Armillarsphere / Konstruiert / von / H.Albrecht / Lehrer / Berlin. c1870 (inf).

Dia380. Iron base Dia160. Iron pillar H130. Meridian ring Dia400, adjustable for latitude 0-90°. Equator graduated 0-360° and 0-24. Ecliptic 0-360°, zodiac constellations. Iron rings for tropics. No rings for arctic circles. Sheet iron horizon Dia380 with 16-point compass rose, graduated 0-90 four times (zero at E and W). Overall H580.

498 (RUNDETRN C1-1). Globe.

Celestial.

Made by: W.J.Blaeu

Signed in two cartouches: Spæra Stellifera Acurata exhibens dispositionem stellar. fixar. ex certiss. mis D. Tych. Brahæ observationeb ad annum 1606 ac comodatarum: et australib'stellis nostra instructione a Frederico Houtmano observatis insignita auct. Guil. Ianssonio. Doctissimo clarissimo viro D.Adriano Franciana professori ordinario. Hanc Sphæram stellatam benevolentia ergo dedicat Guil Ianssonius 1606

1606.

Dia135. 12 gores meeting at the ecliptic poles. Graduated ecliptic and equator. Tropic and arctic circles. Brass meridian ring graduated from North: 0-90-0/90-0-90° (0/90 at the south pole). Supported in plastic stand.

Ref: Krogt, p 56.

499 (RUNDETRN C4-20).

Armillary sphere. Geocentric.

Not signed.

c1850 (g).

Earth globe Dia45. Brass meridian ext Dia190 int Dia168, graduated 0-90 four times (0 at equator). Brass rings for equator (graduated in degrees), tropics and arctic circles (graduated 0-36).

Brass ecliptic with engraved names and symbols for zodiacal constellations. Horizon ring ext Dia218 W24 engraved four times 0-90 and "BORA-MAESTROPONENTE-GARBINO-AVSTRO-SIROCCO-LEVANTE-GRECO". Four cabriole brass feet.

500 (RUNDETRN C1-7). Globe.

Celestial.

Made by: Adolph Dreschler, Dresden (inf)

1923.

Copy of arabic original from 1279 by Mohammed Ben Muyed el'Ordhi in Mathematisch-physikalischer Salon in Dresden. 12 gores glued to solid turned wooden sphere Dia144. Equator and ecliptic with Kufic script. Lignum vitae base Dia150. Overall H190.

501 (RUNDETRN C1-2). Globe.

Celestial.

Signed (cartouche): SPHERA STELLIFERA....qua ut specula quandam firmamendi uni....siideru ornatum...ordinem summa qua...Guidielmo Janzonio magni Tychonis quondam discipulo accuratis dispositum...quam hactenus auctiore ex observationib recens a Nob.Viro De Tycho Brahe Astronomo incomparabili habitis deprompta annoc 1600 et quo deinceps seculo accomodata intueri liceat.

Another cartouche is not legible, but ends with the name GIULIELMUS JANSSONIUS BLAEU.

After 1621 (use of the name Blaeu).

Dia340. Blue background with coloured constellation figures. Equator, tropics, polar circles, ecliptic. Brass meridian ring graduated 0-90-0/90-0-90° with 0/90° at the poles. 12 gores mee-

ting at the ecliptic poles. Hour circle with pointer. Wooden horizon ring with mounted paper scales: zodiacal signs, two calenders (marked: CALENDARIUM VERUS and CALENDARIUM GREGORIANUM), months, many names of days and compass directions in Dutch. Dutch type wooden stand with four turned pillars and circular base plate Dia350.

Ref: Krog, p 55 and 56.

502 (RUNDETRN C1-6). Globe.

Celestial. Cubic.

Signed: Der platten Himmelskugel

The prints are from second half of 18th century. The mounting from 1928 (inf).

Six copper prints mounted on a cube 175x175x175. German text. Equator, ecliptic, tropics.

503 (RUNDETRN C1-12). Globe.

Celestial.

Signed: BERLIN / Geogr artist Anstalt / ERNST SCHOTTE & Co c1880 (g).

Non-magnetic metal. Dia180. 12 gores and polar caps. Mounted with polar axis vertically fixed on turned ebonized wooden base Dia140. Overall H310.

504 (RUNDETRN C2-17). Globe.

Terrestrial.

Dia135. Reproduction of 16 century globe. Paper gores mounted on wooden sphere.

505 (RUNDETRN C1-8). Globe.

Celestial.

Signed: GLOBUM COELESTEM / pro medio seculo XIX / secundum / Map-pam cocle stem G.SCHWINGKII /

construit et delineavit / N.ANDERSEN
/ præfectus decurionum / ordinis
architectorum militarium / regis dani-
ae HAFNIA MDCCCLI / Sumptus fecit
C.A.Reitzel / Lith A:Bull.
c1860 (g).

Dia260. Non-magnetic metal. 12 gores
meeting at the poles. Plywood meridian
with paper scale 0-90° four times (0 at
equator). Wooden horizon ring with
paper scales 0-360°, 1-24, calender with
dates for every two weeks. Dutch type
stand with four turned pillars on base
with crossbeams and circular wooden
plate.

506 (RUNDETRN C2-16). Globe.
Terrestrial.

Signed: Råths politischer Erdglobus
c1920 (g).

Glass Dia260 with electric light. Alumi-
nium meridian graduated four times 0-
90° (0 at equator). Wooden horizon
with paper scale 0-180° twice, zodiacal
constellation. Two calendars. Overall
H440.

507 (RUNDETRN C1-11). Globe.
Celestial.

Signed: Dietrich Reimers / Himmels-
globus ...Berlin.
c1880 (g).

Dia340. 12 gores. Equator, ecliptic.
Important constellations drawn in red
lines. Mounted at fixed latitude (~25°).
Supported at wooden pillar and turned
wooden foot Dia220.

508 (RUNDETRN C2-15). Globe.
Terrestrial.

Signed: A.FÖLD / GÖNCZYPAL /
FELKL JANOS / PRAGABAN
Late 19th century (g).

Dia315. Brass meridian ring, graduated
90-0-90°. Dodecagon wooden horizon
with paper scales: calendar, degrees,
compass directions, zodiacal con-
stellations named in Czech. English sty-
le wooden stand with tripod and com-
pass. Overall H700.

509 (RUNDETRN H2-4). Microscope.
Compound.

Signed on the stage:

Dollond / London

Signed on the mirror: H.Møller 1823
1823.

Brass. Late Culpeper type. Stage Dia88
on three cabriole feet. Substage conca-
ve mirror. Three feet support the outer
tube Dia56. Draw tube focusing. Wood-
en base 170x170 with drawer for acces-
sories: object carousel with 12 ope-
nings, tweezers, four bone-mounted
object glasses etc.

510 (RUNDETRN I2-12). Compass.
Marine.

Signed: H.E.HOLST / KJØBENHAVN
/ G.P.20
c1870 (fl).

Dry card. Brass bowl Dia200. Gimbal
mounted in octagonal mahogany case
260 across. Scale on edge of the house
0-180° twice, and 16 compass points.
Compass card 64 points and 0-90° four
times in 1° divisions. Overall H170.

511 (RUNDETRN I2-15). Compass.
Marine. Tell-tale.

Signed on compass card: Iver Jensen
Borger i Kiöbenhavn
c1780 (fl).

Suspended in a chain from the ceiling.
The compass card can be seen from

below through a glass dome. The upper part is formed as a closed crown made of painted sheet iron. The glass sphere cut with floral motives. Overall H300. Max Dia320. 32-point compass card. Printed and coloured allegorical figures; fleur de lys at North, ornamented East, scale 0-90-0-90.

512 (RUNDETRN I2-13). Compass card.

Signed: C.C.Lous...
1780.

Copper print. 64-point rose. Dia 163. Fleur de lys at North. Marked around the centre: "En Rose indrettet allene Til at Styre efter". On the reverse (in hand writing): "efter rigtige og af mig beviste Grunde forfærdiget af C.C.Lous....1780".

513 (RUNDETRN I3-11). Compass. Geomantic. Chinese "lo-pan".
Not signed.

c1850 (inf).

Compass Dia22 (needle and glass missing) mounted at centre of Dia168 lacquered plate with chinese signs arranged in 14 circles. Fitted in square wooden plate 188x188.

514 (RUNDETRN I3-10). Compass. Brass.

Not signed.

Late 18th century (inf).

Dia100 H18 in 124x124 brass plate. Scale twice 0-180° in 1° divisions. Bottom of compass engraved with 32 point rose with fleur de lys at North; engraved: "NORD, EST, SUD, OST" (French or German?).

515 (RUNDETRN I3-9). Compass.

Deviation.

Signed: LESNE QUAI DE L'HORLOGE A PARIS

c1800 (g).

Wooden case 186x94 with sliding lid. Needle locked by closing lid. Scale +30 to -30° in 1/2° divisions at North and South. Eight-point rose with Cupid figure at North.

516 (RUNDETRN I3-8). Compass.

Deviation.

Not signed.

Mid 19th century (g).

Wooden case 198x96 with sliding lid. Scale, drawn by hand, +25 to -25° in 1° divisions at North and South.

517 (RUNDETRN I1-6). Compass.

Portable. Dry.

Signed: H.E.HOLST / KJØBENHAVN
c1870 (fl).

Turned wooden bowl Dia76 H38 with glass; lid fitting in turned recess. 32-point compass card.

518 (RUNDETRN I2-7). Compass.

Marine. Dry.

Signed at centre of card:

M.G.Kempel / i Aarhus

Hand-written in the bowl: Aarhus 12

Marts 1818

1818.

Turned wooden bowl Dia125 H104 (cracked). Glass lid fastened with putty. 32-point compass card, white on black background. Fleur de lys at North. Foliage at East. At the centre is a picture of a waterway (canal?) with bridge (could be Dutch).

519 (RUNDETRN II-1). Compass.
Pocket.

Signed: Schubert / Freyberg
c1840 (inf).

Brass. Dia62 H16. Lens shaped, like a pocket watch. Silvered scale graduated 1-12 twice, each unit further divided in 1/8. Engraved at bottom of case: "Morgen Stehend Nach Spaat". Brass ring for transport.

520 (RUNDETRN II-2). Compass.
Pocket.

Signed: PETER BERG / I KIÖBEN-
HAVN
c1800 (g).

Brass. Dia46 H13. 32-point compass card, 0-90 four times with 0 at North and South. Fleur de lys at North. Brass ring for transport.

521 (RUNDETRN II-3). Compass.
Pocket.

Not signed.
c1700 (inf).

Dia46. Brass in fitted cardboard case with silk lined lid, closed by a small hook. Needle with open rings between centre and the points. 32-point compass rose engraved in the bottom. Fleur de lys at North. On the reverse is engraved the names of 14 towns and their latitudes in deg and min.

522 (RUNDETRN II-4). Compass.
Pocket.

Signed: Iver Jensen Borger i Kiöbenhavn / 1786 i Julius / Kiöbenhavn 1786.

Turned wooden case with lid fitting in recess and ornamented like leather. Dial25. 32-point compass card; North and East ornamented; scale 0-90° four times with 0° at North and South.

523 (RUNDETRN II-5). Compass.
Pocket.

Not signed.

Mid 19th century (g).

Brass house Dia52 with lid fitting in recess. H12. Mica compass card with magnetic needle. 16-point compass rose.

524 (RUNDETRN D3-47).

Chronometer. Marine.

Signed: Thomas Mercer no.25490
c1964.

Dia116. Wooden box with wooden and glass lids. 190x180x170. Was installed in "EMMA MÆRSK IV" 1964-74.

525 (RUNDETRN I3-16).

Deviatometer.

For compass corrections.

Signed: H.HUGHES & SON / IMPROVED COMPASS DEVIATOMETER / 59 FENCHURCH ST / LONDON / No336.

c1910 (g).

Circular metal plate, graduated 0-90-0-90° in 1° divisions. Also marked with cardinal directions, 0° being at N and S. At the centre is an equinoctial dial, adjustable for latitude and marked "HOUR CIRCLE" and graduated VII-0-VII in 5 min divisions. Mounted on gimbals in mahogany box 330x300x330.

526 (RUNDETRN D1-3). Sundial.

Six woodcut prints from "COMPENDIUM SCHIOTERICORUM...", Berne 1629 by Johann Rudolf von Graffenried. Glued on to triangular wooden prism 95x95x134, H110. Rectangular wooden base 134x92. Inscriptions in Latin and ancient German. Allegorical picture "MEMENTO MORI".

527 (RUNDETRN D1-9). Sundial.

Travelling, with compass.

Not signed.

c1800 (g).

Octagonal brass plate 100x100. Graduated I-VIII and IIII-XII. String gnomon, held by a hinged brass arm L93. Compass Dia51; needle with arrow at each end. Engraved 32-point compass rose. Vellum(?) box 115x115, black with floral decorations; lined with coloured paper. Inside the lid is a handwritten time correction table.

528 (RUNDETRN D1-10). Sundial.

Travelling.

Not signed.

mid 18th century (g).

Brass 79x79 with arabic numerals along the edge, 3-12 and 1-9 in 1/4 hour units. Compass Dia50 with silvered bottom; engraved 16-point compass rose. Arrow shaped needle can be locked for transportation. Folding plate gnomon. Shagreen box 90x90 with crown and border ornament on the lid; red lining.

529 (RUNDETRN D1-11). Sundial.

Equinoctial, travelling.

Signed: L.T.M. (likely Ludw. Theodor Müller, Augsburg)

c1750 (g).

Brass. Octagonal, 56 mm across. Dial adjustable for latitude, engraved III-XII-VIII; hinged gnomon. Bottom of compass silvered and engraved OC, OR and E-E with arrow for deviation from South. The rim has arcanthus ornaments. On the back are altitudes for eight locations.

530 (RUNDETRN D1-12). Sundial.

Horizontal.

Signed: Wenz Hieronimus Scharapalka (Polish).

Mid 18th century (g).

Brass 125x102. Engraved dial graduated I-XII in 1/4 hour divisions. String gnomon. Compass Dia40. Four screw feet. Folding string support with plumb bob for levelling. Flower ornamentation at the base of the string gnomon.

531 (RUNDETRN D1-13). Sundial.

Horizontal.

Signed: C.PIERRET.FECIT / A.BRUXELLES / HORIZONTAL / ANNO

1732

1732.

Brass 192x192, 2 mm thick. Graduated along the edge: IIII-XII-VIII in 1/4 hour divisions. Brass gnomon plate H57. Latitude about 50°. Seven holes in the plate for fastening on a base. Marked on dial "NORD WEST ZUYDE OST". Poor brass with uneven surface and casting flaws.

532 (RUNDETRN D1-21). Sundial.

Equinoctial.

Signed: le Maire Fils AParis.

c1770.

Brass. Octagonal 65x58. Silvered scale for latitude 0-80°. Silvered hour ring II-XII-IX in 1/4 hour divisions. Pointed brass gnomon. Octagonal leather box 125x112x40 with flower ornaments and suède lining. 13 towns with latitudes engraved on the face of the dial.

533 (RUNDETRN D1-14). Sundial.

Butterfield.

Signed: Butterfield AParis

c1700.

Brass. Octagonal 65x58. Compass Dia28. Spring loaded folding gnomon. Dial along the edge IIII-XII-VIII. Foliage ornamentation. Silvered compass face engraved: N, nno, N, nne, NE, ene, E, ese, SE etc. Engraved in the dial "deg 47 min 45". Octagonal leather case 73x66 with brown velvet lining.

534 (RUNDETRN D1-15). Sundial.
Horizontal.
Not signed.
1760 (engraved in the lead).
Lead. Octagonal 115 across. Gnomon missing. Hour scale 4-12-8.

535 (RUNDETRN D1-16). Sundial.
Horizontal.
Not signed.
c1800 (carved in the marble).
Marble 183x183x22. Gnomon missing.
Hour scale 4-12-8.

536 (RUNDETRN D1-19). Sundial.
Equinoctial. Travelling.
Signed: ED.MESSTER BERLIN
c1900 (g).
Nickel plated case Dia50 with hinged lid. Silvered eight point compass rose, 0-360°. Deviation indicated. Hour scale IIII-XII-VIII. Latitude scale 0-80°. Clamping of the needle.

537 (RUNDETRN D4-36).
Sand glasses. Two.
Not signed.
c1850 (inf).
Separate bulbs, joining material gone. Octagonal wooden top and bottom 105 across. Four wooden pillars, crudely made. Sand gone. H205.

538 (RUNDETRN D1-34). Sundial.
Universal equinoctial ring.
Signed: J.Sisson London
c1740 (g).

Brass. Meridian ring Dia290, graduated on one side 0-90-0-90°, on the other side 0-90°. The diametrical bar has a L175 slit in which two circular indices with pinhole gnomons can slide. It is graduated in months on one side and "20 10 Æ 10 20" and zodiacal signs on the other. The equatorial hour ring is marked I-XII-I-XII and divided to 2 min.

539 (RUNDETRN D1-29). Sundial.
Horizontal with compass.
Not signed.
c1900 (inf).
Brass Dia40 H15. Compass card with a small gnomon set for a fixed latitude. 32-point rose. Hour lines marked IIII-XII-VIII. Convex glass cover.

540 (RUNDETRN D1-33). Sundial.
Universal equinoctial ring.
Not signed, but latitude scale suggests Augsburg.
c1700 (g).
Brass. Meridian ring Dia135, graduated 0-90° in 5° divisions. Only latitudes between 40 and 50° are numbered, suggesting geographical area of use. Equatorial ring marked 1-8 and 4-12; between 8 and 4 divisions to 5 min. Declination ring Dia112 with diametrical bar adjustable on scale 30-0-30. Scales for adjustments to date or sun's declination.

541 (RUNDETRN D4-35). Sand glass.
1 minute.
Not signed.
c1900 (g).

Glass blown in one piece. Circular wooden top and bottom Dia68 H126. Four turned pillars.

542 (RUNDETRN D3-37).

Chronometer. Pocket.

Signed: URBAN JÜRGENSEN /

No648,34 / Kiöbenhavn

c1840.

Silvered brass. Dia70 H35. White dial, I-XII, seconds dial Dia24. Winding key.

543 (RUNDETRN D3-43).

Chronometer. Marine.

Signed: DENT, LONDON / Chronometer Maker to the / QUEEN No2075 Mid 19th century (g).

Brass, Dia104. Gimbal mounted in mahogany box 158x158x20. Roman numerals. Seconds dial with Arab numerals. Winding dial 56-0.

544 (RUNDETRN D2-45).

Gunner's level.

Not signed.

Second half 17th century (g).

Rectangular brass triangle, the smaller sides L80. Along one of these is a brass base 110x17. At the end of the other is an index pointing to an arc with scale between this side and the hypotenuse. The scale is over a 45 deg angle divided 0-15 in divisions diminishing by increasing angle with the small side. The pointer might be a later substitution of a plumb bob. The triangle is pierced and ornamented with arabesques.

545 (RUNDETRN H1-2). Microscope.

Screw barrel.

Not signed.

c1740.

Ivory barrel Dia28 L64 with wooden

handle L47. Six objectives in wooden mounts Dia38. Five wooden slides with mica object covers. Accessories. Fitted wooden box 194x125x46 decorated with marbled paper. Table showing magnifications with the six lenses, in German.

546 (RUNDETRN H1-3). Microscope.

Screw barrel and compass types.

Signed on the back of the box: IEAN CUFF / MICROSCOPPE.

c1750 (g).

Brass in fitted box, folding like a book. The screw barrel Dia30 L75; six objectives. Seven ivory slides with four apertures each; one brass slide with three apertures. The compass microscope is the Lieberkühn type and is being screwed to the box. The wooden box 125x210x60 is covered with coloured paper and lined with red skin.

547 (RUNDETRN H2-5). Microscope.

Compound, Cuff-Baker's design of 1743.

Signed: J' CUFF LONDON

c1750 (fl).

Mahogany base 160x160 on which screws a brass base plate supporting stirrup mounted concave mirror. Vertical pillar with two rectangular section slide bars, one fixed to the base, the other to bracket with ring for supporting the tube. Tube Dia38 L180 including nose piece Dia23. Open stage with three wings, one with hole for supporting condensing lens (bull's eye) in stirrup mounting. Spring slide holder. Six objectives. Lieberkühn carrier. Box with eight ivory sliders with four apertures each. Turned ivory case for small splittings. Nose-piece with markings: 1-

6 for positioning the Lieberkühn carrier. Focusing by fine adjustment screw after manually setting the limb bracket. Pyramidal mahogany case, base 200x200 H420. Brass carrying handle. Ref: G. Turner III, p 51.

548 (RUNDETRN G4-25). Alidade.

Telescopic for plane table.

Signed: C.F.Poller in Leipzig

Mid 19th century (g).

Brass base plate 445x60, has an eccentric hole for mounting on a horizontal surface. A semicircular scale for elevation 90-0-90° in 30 min divisions holds a sighting telescope L330-420. Draw tube focusing. Above the tube is forward and reverse sights with pinholes and wires.

549 (RUNDETRN G3-29). Alidade.

Telescopic for plane table.

Not signed.

Late 19th century (g).

Brass base plate 595x50. Telescopic sight Dia25 L325-290 hinged at objective end at the middle of the alidade. Eye piece end adjustable for elevation, indicating on a double scale, (a) +10 to 0 to -10° in 10 min divisions, vernier to 1 min; (b) 27-0-27°, but 0 is not exactly horizontal. Focusing by sliding draw tube.

550 (RUNDETRN G2-30).

Reflecting circle.

Signed: 59 / CORN.KNUDSEN /

KJØBENHAVN

c1900 (g).

Brass. Base plate with dove tail for mounting. The instrument may be tilted, but no scale for inclination. Between two circular brass plates Dia120 are one half-mirror and one mirror (as

in the sextant). The half mirror is fixed to the lower plate. The full mirror rotates relative to the top plate (gear ratio seems to be 1:2). The top plate has a scale along the edge: 0-628. Above is an alidade with pinhole and wire sights for forward and reverse sighting.

551 (RUNDETRN G1-27). Compass.

Azimuth. Prismatic.

Signed: NEGRETTI AND ZAMBRA / LONDON

Late 19th century (g).

Oxidized brass case Dia115 H30. The needle is an aluminium ring divided 0-360 in 30 min divisions. Foresight with slit and red and green filters. Nearsight has an angled mirror for compass reading. Both sights folding. Clamping of the needle for transportation.

552 (RUNDETRN G1-28). Compass.

Azimuth. Prismatic.

Not signed.

c1870 (inf).

Schmalkalder's patent (1812). Brass. Dia58 H18. Folding sights. Wire foresight H45 and prismatic nearsight. Compass card defective. Scale 0-90-0-90°.

Ref: G Turner II, p 53 and fig 28.

553 (RUNDETRN G5-35).

Rangefinder.

Not signed.

Mid 19th century (g).

Brass. Tube Dia40 L310. At objective end is a rectangular opening 28x17 with provision for five horizontal sighting wires, apparently arranged to sight heights of distant objects. Two draw tubes. Minimum L335, maximum L780. Eye piece is a pinhole at the end

of the smallest draw tube. Each draw tube has engraved four scales marked I, II, III, IV on the sides, each consisting of three scales marked: "Norm", "Inf" and "Cav". The scales apparently for distance to be read against the edge of the larger draw tube when the height is sighted between the sighting wires. The exact use is not explained.

554 (RUNDETRN G1-33).

Alidade, for plane table.

Not signed.

c1760 (inf).

Brass 440x34, with chamfered edges. Engraved scale 0-4 in 1/8 divisions. Folding sights H197, slit and wire. Wooden box with sliding lid.

555 (RUNDETRN G4-17).

Graphometer (but no compass).

Signed: Hans Jacob Schörtl. Joen Lün-
der Sculpsit (likely German).

c1630 (inf).

Brass. Dia270. Arm L170 with fixed sights is broken; it has three parallel scales: 10-250, 10-230, 10-1170. Two semicircular scales 0-180° and 180-0°. Seven more scales are marked "Latera", "Keelline", "Capital", "Flanque", "Halb Diam", "Polig int", "Bolwercks punct". At the centre is engraved "face ist Rut Courtine 36". Engravings of renaissance ornamentation, animals, masques, arabesques.

556 (RUNDETRN G5-19).

Planimeter (?).

Signed: Planimètre-militair de
Sinner / Otz in Bern

Mid 19th century (g).

Brass. Two hinged rulers with chamfe-

red inner edges. Silvered scale divided 0-150 mm with zero at the hinge, (0-20 omitted, prevented by the heavy link). Sights at the end of both arms H130; one is a slit, the other has two wires (top and bottom) with a mirror between. A crossbar can be fitted with thumb nuts to set the rulers at right angle. Wooden box, shagreen covered; green skin lining; 216x88x30. The use is not known.

557 (RUNDETRN G5-18). Protractor.

Signed LUND & ENGELSTED /

KJØBENHAVN / MR / No 24

c1900 (g).

Brass. Silvered scale, semicircle, Rad86, graduated 10-170° and 190-350° with chamfered edge. Diametrical ruler extended to L500, with scale 1:2000. Shaped, black fishskin case with purple velvet lining, L278.

558 (RUNDETRN G2-16). Level.

Signed: Newey's Patent

c1900 (g).

Brass. Sighting tube Dia20 L145. Pin-hole sight. The tube extends to brass house Dia38 H43 containing two wires mounted in gimbals for determining horizontal.

559 (RUNDETRN G4-12).

Circumferentor.

Not signed.

Mid 18th century (g).

Brass. Dial12. Scale 0-180-0° in 1/2° divisions. Sights H23 with slits. 32-point compass, scale 0-90-0-90° in 1° divisions. Magnetic needle missing. Suspension ring. "Z" at South indicates Dutch make. Staff mounting.

560 (RUNDETRN G2-11).

Reflecting circle.

Signed: Lund & Engelsted / Kjöbenhavn / SMKA & BS No 43

c1900 (g).

Probably a rangefinder. Two 4 mm brass plates Dia115 spaced 33 mm. Between these are a fixed half-mirror and a sighting telescope. The index mirror is mounted on a gear and connected to an index pointer above the top plate. The top plate is nickel plated and has two scales, 0-180° and 180-0° divided to 0,5° and with vernier to 5 min. Sun shade at the telescope. Folding handle central on the lower plate. Marked at the top plate: "Tophøide=60 Fod"; also: "1/2 q.m.l.", "1 q.m.l.", "1 hel Kabell", "1 halv Kabell", "1 hundrede Alen". Shaped black leather case 120x75x160.

561 (RUNDETRN G2-13). Level.

Not signed.

Mid 19th century (g).

Boxwood. Gimbal mounted and weighted angle mirror, 23x11, with a horizon line engraved along the middle. Boxwood handle also houses the weight. Dia40 L90.

562 (RUNDETRN G2-14). Level.

Not signed.

c1850.

Boxwood H125, L160. T-shaped with gimbal mounted sighting vane, L140 and handle Dia45.

563 (RUNDETRN G1-10).

Surveyor's compass.

Signed: Richer a Paris / No 2.

c1800 (g).

Brass compass Dia143 with silvered bot-

tom and scale 0-400° in 1° divisions. Wooden case 176x176 with sliding lid. Spirit level with pinhole and crossed wire sights. At one side is a telescope (objective missing) with two pinholes and crossed wire sights for forward and reverse sighting. Elevation scales 0-50° and 25-0-25° in 30 min divisions. Vernier to 3 min.

564 (RUNDETRN G3-31). Level.

Not signed.

c1840 (inf).

Drainage level. Brass. Spirit level. Sighting telescope Dia20 L280 mounted together with an alidade on the horizontal axis. Two symmetrical arcs with vertical scales 19-0-35° in 1/4° divisions. Two verniers, one at each end of the alidade. Socket for staff mounting.

565 (RUNDETRN G5-32). Octant.

Artillery.

Not signed.

Mid 19th century (g).

Brass set square, small side L110, with spirit level adjustable 0-45° by rack and pinion. Silvered scale 0-900. Vernier. Marked "Noniusteil = 1/1000 d.Rad.". Triangular oak box 135x195 lined with suède.

566 (RUNDETRN G4-7).

Graphometer.

Signed: Bernier Au Niveau A Paris / No 6 1771

1771 (sign).

Brass. Semi circle Dia 272. Scale 0-180° in 30 min divisions, vernier to 1 min. Pierced scroll work with compass Dia92. Eightpoint compass rose, scale 0-180-0° and 0-360°. Telescope below, Dia20 L395 fixed at N-S. Telescope abo-

ve, Dia20 L395; lens in eye piece missing. Index arm with clamp and fine adjustment screw. Universal mounting for staff.

Ref: Bennett, fig 98.

567 (RUNDETRN G4-8). Alidade.
Telescopic.

Signed: G.W.KLEIN / KJØBENHAVN
c1880 (g).

Brass 517x51x7 with chamfered edges. Crossed spirit levels. Telescope Dia30 L330. Rack and pinion focusing. Full circular dial Dia155; silvered scale 0-90-0-90° in 30 min divisions. Two silvered verniers to 1 min. Magnifiers. Push fit dust cover.

568 (RUNDETRN G1-3). Alidade.
Not signed.

Mid 19th century (g).

Brass 570x42x6. Slit and wire sights H180. Chamfered edge. Transversal scales engraved.

569 (RUNDETRN G1-6). Alidade.
Not signed.

Mid 19th century (g).

Brass 470x37x4. Slit and wire sights H120. Chamfered edges. Transversal scales engraved.

570 (RUNDETRN G1-2).

Graphometer. "Planchette ronde".

Signed: CHAPOTOT A PARIS

c1680 (Chapotot the elder fl 1670-86).

Brass. Circular plate Dia156. Scale along the edge 0-180-0° and 180-0-180°. Inside the scale is a Dia140 and 3mm deep space for placing drawing paper. A notch is provided to keep the paper in place. Slit sights at 0 and 180°. The

alidade fits on central pivot, has chamfered edges, slit sights, Dia46 brass compass with eight point rose engraved, and an index arm perpendicular to the ruler.

571 (RUNDETRN G2-1). Protractor.
Reflecting. "Douglas" type.

Not signed.

Mid 19th century (g).

Brass. Ruler with chamfered edge 140x25; semicircle Rad54, scale 0-180° in 30 min divisions on an about 120° arc; vernier. Along the arc moves a sector with a mirror. A pin at the sector moves in the slit of an index arm with a half-mirror. The ruler is engraved with a transversal scale. Mahogany box 160x110x45.

Patent 1811 by Sir Howard Douglas.

572 (RUNDETRN G3-5). Quadrant.
Artillery.

Signed: H.E.1853
1853.

Brass bar L315, angle cross section. The quadrant, Rad100, has scale -10 to 100° in 1/2° divisions. Vernier to 2 min. Alidade with slit and wire sights. Marked "K.A." meaning Danish Coastal Artillery. Shaped sheet iron box, L330; lining gone; lock with hook.

573 (RUNDETRN G3-4). Level.

Surveying.

Not signed.

c1850 (inf).

Brass. Spirit level L230 with adjusting screw at one end. Above is an alidade with slit and wire sights, mounted at the middle on a horizontal axle. Adjustable with scales at both ends -2 to 12° in 1/3° divisions.

574 (RUNDETRN G4-24). Theodolite. Transit.

Signed on compass dial: J. & W.E. Archbutt / 201 Westminster Bridge Rd London / No 228
Trade label: OPTICIANS / Surveying and Mathematical Instrument / MAKERS / 201 Westminster Bridge Road / Lambeth / BRANCH ESTABLISHMENT / 8 Bridge Street Westminster
c1880 (inf).

Telescope minL275. Spirit level. Vertical dial Dial135 with silvered scale four times 0-90° in 0.5° divisions. Reading by two microscopes, vernier to 1 min. Two A-supports. Eight-point compass with silvered scale 0-360° Dial105. Horizontal dial read by two telescopes. Clamping screw and fine adjustment. crossed spirit levels. circular plates with four adjusting screws for staff mounting. Mahogany box 480x185x180 in leather carrying case.

575 (RUNDETRN G1-20). Level.

Surveying. Y-type.

Signed: E. JÜNGER Kjöbenhavn No 4
c1860 (fl).

Brass. Named "Stampfer's Level". Telescope Dia30 L370. Eye piece and objective missing. Rack and pinion focusing. Spirit level below. Full horizontal circle 0-360°, Dial135; silvered scale very worn. Vernier with magnifier. Circular base with two adjustment screws for staff mounting. Parts are missing. Fitted wooden box 420x280x160 with leather strap. H240.

576 (RUNDETRN G4-26). Alidade for plane table. Telescopic.

Signed: G & S Merz in München
c1850 (g).

Brass. Ruler 534x51x5. One edge chamfered. No engravings. Oxidized brass conical pillar with axle for eccentrically mounted telescope Dia28 L234. Objective with dust cover. Eye piece with rack and pinion focusing. Spirit level above. On the other end of the axle is a sector with scale 40-0-40° to 1/4° divisions. Vernier to 1 min. Magnifier. Overall H150. Wooden box 570x180x140 with leather strap.

577 (RUNDETRN F1-13). Astrolabe.

Signature not established.

Allegedly signed 1170 in the hijrah era, which should be 1792, but local files state 1756.

Probably Persian with Arab inscription. Not complete. Cast bronze. Max Dial113. Rete Dial106 is not open but displays along the edge the signs of zodiac. Otherwise richly ornamented (arabesque) on front and reverse. The Mater has many Arab signs, mostly names, but no indications of maker or owners. On the reverse is top left a quadrant with about 50 horizontal lines, top right is a table of figures (Arab?), and the lower half has a shadow square with Arab signs and surrounded by ornamentations. Large throne. Suspension rings at top and centre of reverse indicate topographical use.

578 (RUNDETRN F3-14).

Dipleidoscope

Signed: 6 Westminster Chambers London. Latimer Clarkes Patent. No 724.

A.J. Frost Fecit 1883.

1883.

Brass. Telescope L260 with prism to eye piece which is at right angle to the objective. Vertical scale (marked No 736)

Dia90, magnifying glass and adjusting screws. Spirit level above. Base Dia160 with compass rose. Fitted wooden box.

579 (RUNDETRN F1-15).

Graphometer.

Signed: Me fecit Franciscus / Fiebig Hagæ

c1640 (fl c1633-1647).

Brass. Compass Dia40 with silvered 32-point compass rose 0-360°. Semicircle Dia150 with scales 0-180° in 1/4° divisions, 180-10° in 10 min divisions, 180-0° in 1° divisions. Alidade with slit and wire sights. Below is a sphere for universal staff mounting. Wooden, leather-bound box, made to look like a book, 236x160x104, printed on the back: ME FECIT / FRANCISCUS FIEBIG / HAGÆ

580 (RUNDETRN F2-5). Octant.

Signed: C.PLATH HAMBURG

Late 19th century (g).

Limb Rad180. Silvered scale -10 to 118° in 20 min divisions. Vernier with telescopic reading. Clamp and tangential screw. One grey filter.

581 (RUNDETRN F2-3). Octant.

Signed, handwritten on ivory nameplate: "Adams 1790"

c1790.

Ebonized wood. Limb Rad410. Scale -3 to 99° in 20 min divisions; vernier to 1 min. Double pinhole sight. Red filter in square brass frame. Brass alidade ornamented.

582 (RUNDETRN F2-2). Octant.

Signed: Culmer & Tennant Makers London

Mid 19th century (g).

Ebonized wood. Limb Rad330 L250. Ivory scale -2 to 99° in 20 min divisions. Vernier to 1°. Clamp and tangential screw. Two pinhole sights with sliding shutter. Filters missing. Ivory pencil holder.

583 (RUNDETRN F2-1). Octant.

Not signed.

Mid 19th century (g).

Ebonized wood. Limb Rad270. Ivory scale -4 to 100° in 20 min divisions. Vernier to 1 min. T-section index arm. Two pinhole sights with sliding shutter. Three filters for index mirror. Clamp and tangential screw. Note plate on the reverse.

584 (RUNDETRN F2-6). Octant.

Not signed.

Mid to late 18th century (g).

Ebonized wood. Boxwood limb Rad610. Scale, engraved in the wood 0-90° in 20 min divisions; transversals to 2 min; also same scale reversed; marked with three asterics. Double pinhole sight with sliding shutter. One pinhole sight for reverse sighting. Two red filters in square brass frames. Mirrors defective.

585 (RUNDETRN F1-9). Quadrant.

Print.

Signed: Franc. Schillem Sculpsit / ex præscripto / P.Lansb

Original probably c1600.

Print from wood carving fastened to wooden plate. Plumb bob. Rad163.

586 (RUNDETRN F2-8).

Reflecting circle. Borda's.

Signed: No 61. Gambey à Paris c1840.

Brass Dia270. Silvered full circle scale 0-

720° in 20 min divisions; vernier (not legible). Inner concentric scale Dial 50°, 0-150° and 0-140°. Alidade with screw clamp and fine adjustment. Telescopic sight Dial 6 L120. Magnifying glass for vernier. Red filters. Fitted mahogany box 300x310x75.

587 (RUNDETRN F2-4). Octant.
Signed: Spencer Browning and Rust.
London

Mid 19th century (g).
Mahogany frame with brass fittings and index arm L400 with floral ornaments. Ivory scale -2 to 99° in 20 min divisions; vernier to 1 min. Forward and reverse sighting. Red and green filters. Note plaque on the reverse. Hole for pencil, but pencil missing. Shaped oak box 480x420.

588 (RUNDETRN F2-7). Sextant.
Signed: Troughton London
c1800 (g).
Brass double frame, vertical strut and straight horizontal strut. Limb Rad250. Scale 0-150°, very worn. Vernier with telescopic reading. Clamp and fine adjustment screw. Sighting telescope L205 with three eye pieces and one pinhole. Filters for horizon and index mirrors. T-section brass index arm. Fitted and shaped mahogany box.

589 (RUNDETRN O3-28). Steelyard.
Not signed.
c1900 (g).
Iron. Wooden handle. L720. Scale with max figure "40". No units given, probably Danish Pund.

590 (RUNDETRN O1-30). Ell measure.
Not signed.
c1900 (g).

Wood L770. Marked by metal inlay at 1/8, 1/4, 1/2, 3/4 and inches 1 to 6.

591 (RUNDETRN O1-29).
Ell measure.
Marked crowned "C5 1855".
1855.

L775. Distance between marks: 39-78-157-314-472-628 (mm).

592 (RUNDETRN O1-2 to 6).
Plotting scales. Five.
Not signed.
Late 19th century (g).
Boxwood. Chamfered edges. Transversals. L278, L304, L313, L329, L344.
Various scales.

593 (RUNDETRN O1-7).
Plotting scale.
Signed: R.C.O. 1816 / SMITH
KJØBENHAVN
1816 (?).
Boxwood 468x53 with 11 scales.
The stamped signature "SMITH" usually indicates Jeppe Smith's successors; but in 1816 Smith was still active.

594 (RUNDETRN O1-1). Standard measure. "Fod" (Danish foot).
Signed inside box: Poulsen 1864
1864.
Brass. 525x32x5. Engravings: "12-9-6-3-0" (12 "Linier" to 1 "Tomme" (Danish inch). Each Linie is further divided in 1/12th. Also marked "0-I-II.....XVI-XVII TOMMER". For temperature 12 deg R. (1 Danish inch is about 26.1 mm.) Wooden box 566x47x23.

595 (RUNDETRN O1-8).
Plotting scale. Chinese.
Not signed.
Late 19th century (g).

Boxwood. 314x38x10. Graduated on all four sides. Equal graduation on the two large sides: 8 divisions of 39.3 mm, each subdivided in seven parts marked with chinese signs. The length is said to be 0.5 li; 1 Li is about 1/3 mile.

596 (RUNDETRN O1-18). Measure.

Length.

Not signed.

c1880 (g).

Mahogany with brass hinge folding as a pocket knife. Divided in inches and centimeters. L573 opened. Stamped in the wood: "HAMBURG". Metric system introduced in Germany 1868-71.

597 (RUNDETRN O1-10).

Plotting scale.

Signed: Nov 1863. J.E.T.Hansen 1863.

Brass. Scales one side: 6 inches, decimal divisions; the other side: 7 inches French, each line divided in 10. 224x43x4. Chamfered ends.

598 (RUNDETRN O1-9).

Plotting scale.

Signed: SMITH 2 / 1889

Probably 1889; but this could be a production number.

Brass. 204x43x3. Scale 1:500. Transversals.

599 (RUNDETRN O1-11 to 15).

Plotting scales. Five.

Second half 19th century.

Brass.

(a) 214x39x2. Scales 1:2000 and 1:4000. Transversals. Not signed

(b) 165x28x2. Scale 1:1 Danish inches. Transversals. Signed C.W.Schultz.

(c) 163x29x2. Scale 1:1. Danish inches. Transversals. Signed: SMITH.

(d) 166x27x2. Scale 1:1. Danish inches. Transversals. Not signed.

(e) 338x27x2. Four scales on each side. Not signed.

600 (RUNDETRN O1-17). Rule. Folding, six sections.

Not signed.

c1750 (inf).

L156 folded. Brass. Graduation on one side: 0-36, giving 1 inch = 24 mm; this side is marked "Bayern". Graduation on the other side: 0-30, giving 1 inch = 29 mm.

No 601 (RUNDETRN O1-19).

Beam compass (?).

c1750 (inf).

Brass, cross section 9x9 L615. Graduated on one side 1-22 "Rynlant", and on the other 1-22 "Amsterdam". A steel point fitted in a brass sleeve can slide along the bar. If this is a beam compass, then pen and pen holder is missing.

602 (RUNDETRN O2-21). Protractor.

Not signed.

18th century (g).

Brass. Rad78 L168. Scale 0-180° in 1/2° divisions. 1mm thick, chamfered circular edge.

603 (RUNDETRN O2-22). Protractor.

Not signed.

18th century (g).

Brass. Rule with transversals. L100. Circular scale Rad45, 0-180° and 180-0° in 1° divisions.

604 (RUNDETRN O4-20).

Hydrometer.

Not signed.

c1900 (g).

Aluminium. Clarke's. Scale cross section 9x5 L118. Graduated 0, 1/32, 2/32, "BLOW", 3/32, "LIMIT", 4/32 with four divisions between each. Below is a spherical float Dia42 and a stem with a pear-shaped weight. Overall L230. Mahogany fitted box 264x65x52 lined with blue velvet. Presented to the museum by Cornelius Knudsen, Copenhagen

605 (RUNDETRN O3-23). Weight. 1862.

8 Pund. Bell metal. Dia80 H180 excl handle.

Marked: 8 Pund 1862 / C5 (crowned) / A B C D / H. Also stamped three towers (for Copenhagen).

606 (RUNDETRN O3-24). Weight. 1854.

2 Pund. Brass. Dia50 H50 excl handle.

Marked: P 1854 / C5 (crowned) (three towers) K

607 (RUNDETRN O3-25). Weights. Seven. c1800 (g).

Bell metal. Shaped as frustrum of pyramid.

Marked:

(a) 1P	C5 (crowned)	3 towers (Copenhagen)	1770	K
(b) 1/2P	do	do	do	do
(c) 1/4P	do	do	do	do
(d) 41	do	(illegible, corroded)		
(e) 21	do			K
(f) 11	do			
(g) 1 Lod	C (crowned)			

608 (RUNDETRN O3-26).

Nest of weights.

c1700 (inf).

Not complete. The outer cup is marked "4" (Pund) "C" and a pair of scissors indicating Saxony. Hinged lid with lock and handle, ornamented. Two inserted cups are not marked.

609 (RUNDETRN O3-31). Weights. Set of eight.

c1700 (g).

Bell metal. Square.

Marked:

(a) 1P	B	C5 (crowned)	1684.
(b) 1/2 P	B	C5	-
(c) 8	B	C5	-
(d) 4	B	C5	-
(e) 2	B	C5	-
(f) 1 L	K	C5	-
(g)		C5	

("B" indicates, that the weight is certified in Bergen (today Norway). Certification began there in 1698. "K" stands for

Copenhagen). All placed in cut-outs in wooden block (spruce) 222x75x30.

610 (RUNDETRN P1-1). Sector.

Not signed.

c1780 (inf).

Brass. 140x36x4 folded. Eight scales marked 'Les Parties Egalis', 'Les Plans', 'Les Poligons', 'Les Dividends', 'Les Cordes', 'Les Solides', 'Les Tetragonica', 'Les Metaux'; also the ancient planet-signs for the metals lead, silver, iron, tin and copper.

611 (RUNDETRN P1-2). Sector.

Not signed.

c1750 (inf).

Brass. 158x32x4 folded. On one side a scale 0-90° marked 'Coordes'. On the other 0-100°.

612 (RUNDETRN P1-3). Sector.

Signed: C. Whitwell / fecit 1597
1597.

English. Brass. L170. The cross arc is divided on one side 0-100° with transversals to 10 min; on the other side the arc has the right angle engraved with three scales 0-95°, 0-75° and 0-57°.

613 (RUNDETRN P1-4). Sector.

Signed: E.I:GAEDDE Ao1740
1740.

Two boxwood arms joined by a brass hinge. 330x55x7. Scales marked: sine, secans, LIGE DELE, VOXENDE, BREDE, CORDE, TANGENS. Leather covered cardboard box 345x60x13.

614 (RUNDETRN P1-10). Sector.

Signed: POLYMER-FABRICATI-
ON.....ACKER in EMMISHOFEN.
mid 19th century (inf).

Boxwood. Brass hinge and end caps. 300x43x3. One arm (distorted) has slide (as in slide rule) with figures, probably for conversions.

615 (RUNDETRN P2-6).

Drawing instruments, set.

Not signed. Allegedly made by Professor Smiths Etablissement, Copenhagen.

c1835 (inf).

Brass and steel. Pen, penholder, divider in leather covered case 160x73x22 lined with red felt. Small divider is missing.

616 (RUNDETRN P3-7). Pantograph.

Signed: Henricus Sneewins Me fecit
Leydæ

c1660 (fl Leyden c1650-70).

Brass. Four arms L400 and two smaller sides in the parallelogram L90. Points and pencils missing.

617 (RUNDETRN P3-8). Pantograph.

Signed: Henricus Sneewins Fecit Ley-
dæ

c1660.

Brass. As item 616, except reversed.

618 (RUNDETRN J1-1).

Thermometer. Bimetallic.

Signed: Iis / Thermometer med Mini-
mum / Reaumur / Louis Urban Jür-
gensen / KIÖBENHAVN

c1850 (fl).

Brass case Dia75 H15. Silvered scale -35° to +80° Reaumur, open cut to let the mechanism below be seen. Horseshoe shaped bimetallic spring operates the central index arm via a racked sector. Zero adjustment. The pointer may be arrested on minimum by a ratchet. Tri-

pod brass stand with capriole feet. Wooden box 135x120x20 covered with red fishskin (damaged), lined with red velvet; printed on the lid "Index Thermometer / Minimum / Urban Jürgenssens Sønner Kiöbenhavn"; the lid lined with white silk marked "Reaumur".

619 (RUNDETRN J2-3). Barometer. Surveying.

Signed: BAROMÈTRE HOLOSTERIQUE / OROMETRIQUE / Compensé / H.E.HOLSTS EFTERF / KJÖBENHAVN

c1860 (inf).

Brass case Dia100 H33. Glass covered silvered scale 48.0 to 79.0 and -3.0 to 37.0. The scales are probably adjustable for measuring altitude, but stuck.

620 (RUNDETRN J3-5). Anemometer. Hagemann's portable.

Signed on white metal plate: Anémometre de Hagemann

c1880 (g). Measuring differential between static and dynamic pressures. Glass U-tube with brass collars; one funnel shaped turned to horizontal position to be pointed against the wind for dynamic pressure, the other pointed vertical upwards for static pressure. Mounted on wooden base L370. Copper scale: 5-10-15-20-25-30 M p S.

621 (RUNDETRN J2-4).

Sympiezometer.

Signed: F.A.THIELE / Kiöbenhavn 1842 (g).

Mahogany case 600x60x32. White metal scale 0-45, scale adjustable by wooden knob for zeroing. Mercury in glass thermometer -5 to 45. Below the tube is an index wheel for memory set-

ting. On the reverse hand written years 1842...1863, presumably for calibration.

622 (RUNDETRN J3-6).

Sunshine recorder.

Signed: CORN.KNUDSEN / KJÖBENHAVN

c1890 (inf).

Solid glass sphere Dia93, brass shell app Dia145 for recording paper. Mounted on brass pillar. Turned wooden foot Dia150. Overall H140.

623 (RUNDETRN E2-1). Telescope.

Gregorian.

Signed: J.& W.WATKINS / Charing Cross London

c1800 (fl).

Brass. Tube Dia100 L535. Viewfinder Dia30 L225. Folding tripod with cabriole feet. Brass pillar Dia40-30 H160 with two swan-neck shaped supports for the tube axle. Fine adjusting screw for secondary mirror. Vertical and horizontal worm gear adjustment of tube.

624 (RUNDETRN E2-3). Telescope.

Gregorian.

Not signed.

c1800 (g).

Brass. Tube Dia66 L340. Eye piece Dia22 L74. Fine adjusting screw for secondary mirror. Dust cover. Brass pillar on folding cabriole tripod.

625 (RUNDETRN E3-8). Telescope.

Refracting.

Signed: J.Smith Kiöbenhavn No 64

c1805 (g).

Mahogany tube in two parts; screw joint at the middle; brass fittings. Total L1555-1310. Objective Dia65. Eye piece

Dia42 L385; dust slide. This is likely to be one of the telescopes for the Danish optical telegraph, made by Smith after 1802.

Ref: Nyrop.

626 (RUNDETRN E3-10). Telescope.

Refracting.

Not signed.

c1800 (g).

Decagonal mahogany tube, 46mm across. L1010-950. Brass fittings. Draw tube Dia34. Eye piece Dia33 L250. Erecting lens.

627 (RUNDETRN E2-2). Telescope.

Gregorian.

Not signed.

c1800 (g).

Brass. Tube Dia68 L475. Eye piece Dia25 L85. Fine adjustment screw for secondary mirror. Objective dust cover. The tube screwed to bracket with universal joint to brass pillar. Folding tripod with cabriole feet.

628 (RUNDETRN E1-28). Telescope.

Refracting.

Signed: GILBERT & CO LONDON

Mid 19th century (g).

Brass. Terrestrial. Min L960. Eye piece Dia28 L200. Objective Dia55. Focusing by rack and pinion. View finder missing.

629 (RUNDETRN E1-11). Telescope.

Refracting.

Signed: Berge London

c1800 (g).

Conical mahogany tube. Objective Dia100 with dust cover. Eye piece Dia40 L230. Rack and pinion focusing. Brass

folding tripod with cabriole feet. Mahogany box 670x275x175 (probably not belonging to this instrument).

630 (RUNDETRN E1-6). Telescope.

Refracting.

Signed: DOLLOND LONDON

c1800 (g).

Red painted wooden tube. Brass fittings. Objective Dia70. Four oculars. Three sun filters. Elevation adjusted by expandable strut between tube and base. Tripod with cabriole feet. Mahogany box 1150x210x130.

631 (RUNDETRN E1-9). Telescope.

Refracting.

Signed: WATKINS LONDON

c1800 (g).

Mahogany tube with brass fittings. Tube in two parts L110, screw connection. Eye piece Dia38 L130 with rack and pinion focusing. Objective Dia75. Worm wheel altitude adjustment. Brass pillar on folding tripod with cabriole feet. Mahogany fitted case 670x360x120; lid missing.

632 (RUNDETRN E3-14). Telescope.

Refracting. Galilean.

Not signed.

c1900 (g).

Tube of paste board and horn. One draw, two lenses. Minimum L62. Objective Dia28.

633 (RUNDETRN E3-15). Telescope.

Refracting. Galilean.

Not signed.

Mid 19th century (g).

Brass tube. Dia31, minimum L73, maximum L108. Draw tube.

634 (RUNDETRN E3-16). Telescope.
Refracting. Galilean.

Not signed.

c1800 (g).

Black lacquered paste board tube
Dia41, minimum L57 maximum L80.
Silvered draw tube Dia33. On the draw
tube is scratched "26 Juuli 1808". Red
cardboard box Dia46 L61, with lid.

635 (RUNDETRN E3-17). Telescope.
Refracting. Galilean.

Signed: Lerebours Opten del'obs et du
Bau des Longétudes/ Place du Pont
Neuf a Paris

c1780 (g).

Mother of pearl tube, minimum Dia25
maximum Dia35. Three gilt draw
tubes. Maximum L80.

636 (RUNDETRN E3-12). Telescope.
Refracting.

Not signed.

Mid 19th century (g).

Octagonal mahogany tube. 37 across at
the objective, 29 at the eyepiece. Mini-
mum L280 maximum L465. Brass draw
tube Dia21. Dust slides at both ends.

637 (RUNDETRN E3-13). Telescope.
Refracting.

Signed: ANGELO DEREGNI

Mid 18th century (g).

Paste board tube, horn bound. Three
paste board draw tubes. Outer tube
with floral decoration. Objective Dia13.

638 (RUNDETRN E2-7). Telescope.
Gregorian.

Not signed.

Mid 19th century (g).

Brass. Tube Dia32 L180. Push fit dust

cover. Eye piece Dia15. Fine adjusting
screw for secondary mirror. Shaped
fish skin box L194.

639 (RUNDETRN E3-21). Telescope.
Refracting.

Signed: Utzschneider und Fraunhofer
/ in Benedictbeurn

c1820 (g).

Three-draw. Wooden outer tube Dia49
L255 with brass fittings. Objective
Dia46 with push fit dust cover. Brass
draw tubes. Maximum L815 minimum
L275.

640 (RUNDETRN E3-18). Telescope.
Refracting.

Signed: Fra Prof Smiths Fabrik /
Kiöbenhavn No 532

Engraved in obj brass ring: No 63.

c1840.

Four-draw. Mahogany outer tube Dia59
L275. Brass fittings. Objective (defecti-
ve) Dia48. Brass draw tubes, the smal-
lest Dia34.

641 (RUNDETRN E3-19). Telescope.
Refracting.

Signed: FR VII (crowned) / KA / Prof
Smiths Etablm / Khavn No 1026.

c1850 (King Frederik VII 1848-63).

Three-draw. Mahogany outer tube
Dia47 L227. Brass fittings. Brass draw
tubes, the smallest Dia29. Maximum
L755.

642 (RUNDETRN E3-24). Telescope.
Refracting.

Not signed by maker.

1837.

One-draw. Mahogany outer tube Dia64
L490 with 80mm broad brass collars.
Brass draw tube Dia47. Erecting lens in

draw tube. Minimum L520 maximum L910.

Engraved in brass collar: "Zur Erinnerung von J.E.Bossen 1837. C.E.L.-Collundt."

643 (RUNDETRN E3-26). Telescope. Refracting.

Signed: G & S Mern / vorm Utzschneider & Fraunhofer / in München / 9 Batt B / EMI No 8
c1820 (g).

One-draw. Leather covered outer tube Dia40 L320. Brass objective collar L90. Dust cover. Brass draw tube. Total L435-605. Fitted leather box Dia60 L480 with strap.

644 (RUNDETRN E1-22). Telescope. Refracting.

Signed: Dollond London
c1800 (g).

Mahogany outer tube Dia82. Objective Dia70 with dust cover. Brass draw tube Dia57. Minimum L685.

645 (RUNDETRN E3-23). Telescope. Refracting.

Signed: A (crowned) 1 / EMII No 1.
c1880 (g).

Outer tube Dia61 L690 of which L390 is leather covered. Brass collar L125 for objective. Eye piece Dia29. Erecting lens. L160 extension to draw tube, with screw fine adjustment.

646 (RUNDETRN E3-25). Telescope. Refracting.

Not signed.
c1820 (g).

Mahogany outer tube Dia53 L630. Brass fittings. Draw tube Dia30. Objective Dia42. Min L645, max L805. Engraved

in objective ring "FR VI" (crowned) No 144. This could be made by Jeppe Smith, considering the number being a production number and the time Fr VI's reign.

647 (RUNDETRN P3-9). Pantograph. Called "Storkesnabel".

Not signed.

c1830 (g).

Mahogany with brass charniers. Length of bars 690 and 700. Three small bone wheels underneath. Softwood box 740x170x70 with sliding lid.

648 (RUNDETRN U2-5).

Dividing plate.

Not signed.

Mid 18th century (g).

Brass. Dia675. On both sides are engraved concentric circles marked with names of months, zodiacal signs etc. and with holes, presumably for placing stubs. A supporting stand is now missing.

Allegedly English from mid 18th century. Belonged to the Jeppe Smith's Etablissement until late 19th century. Could possibly be one of the tools brought from England to Denmark by Jesper Bidstrup in 1798?

649 (RUNDETRN E2-32). Telescope.

Reflecting.

Not signed.

c1880 (g).

Sheet iron tube covered with black skin with golden rococo ornaments, Dia100 L830. Brass fittings. Secondary mirror missing. Eye piece not complete. View finder lenses missing. Wooden tripod H1350. From 1874 owned by the astronomer Thorvald Køhl, Odder.

650 (RUNDETRN E2-33). Telescope. Gregorian.

Signed: James Veitch Inchbonny by Jedburgh

c1830 (g).

Tube Dia140 L1290. Ash tripod with strut for elevation adjustment.

651 (RUNDETRN F3-17). Transit instrument.

Signed: TROUGHTON LONDON

c1800 (g).

Brass. Tube Dia60 L780. Conical axle with circular scale divided in 0.5° . Spirit level. Wooden stand. Lenses missing.

652 (RUNDETRN F1-18). Quadrant. Astronomical.

Signed: Joh. Ahl.

1777 (inf).

Brass, on mahogany stand. Rad925. Scale in 90° and 96° in 10 min divisions; vernier to 20 sec. Mahogany stand H~1000 supports a horizontal plate Dia390 divided in 360° in 30 min divisions. Made by Johannes Ahl under supervision of professor Thomas Bugge.

653 (RUNDETRN I2-8). Barometer. Cistern.

Signed: Prof Smiths Etabl. / i Kiöbenhavn

c1820 (g).

Turned wood. L975. Brass gimbals for wall mounting. White metal scale 26-29,5 inch; vernier to $1/24$ inch. The scale is difficult to read, but in Danish.

654 (HERLUFSSH). Level. Surveyer's.

Signed: CORNELIUS KNUDSEN / KJØBHVN

c1900 (g).

Brass L365. Pinholes for forward and reverse sighting. Spirit level L175. Socket with four adjusting screws for pole mounting.

655 (HERLUFSSH). Teaching aid box.

"Das Eisen, seine Gewinnung und Verwendung".

1876 (book published).

Contains specimens of minerals, iron works products, utilities such as file, nails, springs, wrought iron etc. Index of about 100 items, most of them there. Book by Dr. E. Glinzer, Verlag Chr. Vetter, Hamburg. Wooden box 475x300x85

656 (HERLUFSSH). Theodolite.

Signed (engraved on crossbar): Halbaur / a Zorge

c1777 (J.H.Halbauer in Zorge, The Harz, fl).

With compass. Brass. Pinhole and wire sights for horizontal and on the alidade for vertical sighting. No horizontal scale. Vertical scale: $0-90-0-90^\circ$ and also $0-100$ for $0-45^\circ$ (tan). Compass scale $0-360^\circ$.

657 (HERLUFSSH). Alidade for plane table. (fr: Mesureur).

Not signed.

c1850 (g).

Brass rule 450x36, T cross section. Slit and wire sight for horizontal. Quadrant Rad180 for vertical sighting; index arm with slit and wire sights for elevation measurement, scale $0-90^\circ$ in 0.5° . Two screw holes in the index arm as for attaching accessories (?). 19 page instructions "Quelques mots pour mettre à même d'apprécier le Mesureur" by P.J.E.Dupuis, 1851.

658 (HERLUFSH). Camera lucida.
Not signed.
Mid 19th century (g).
Brass. G-clamp L53. Pivot to expanding arm L190-320. Prism fixed to revolving arm Dia4 L110, which fits into the expanding arm. Flap with triangular aperture slides along side of the prism. Box 210x60x28 black lacquered wood lined with suede.

659 (HERLUFSH). Camera Lucida.
As item 658, except box 210x60x28, mahogany, fitted, not lined.

660 (HERLUFSH). Dial. Horizontal cannon dial.
Signed: C. MØLLER KJØBENHAVN (engraved on the dial).
Mid 19th century (g).
Gun is missing. Brass base 180x180 with ornamental edge. Style and dial 6-12-6. Lens Dia39 set in brass bracket with adjustable elevation 0-90°, but no scale for elevation.

661 (HERLUFSH). Orrery.
Not signed.
1688 (acquired 1850).
Note on the instrument "Constructed 1688 in England". Glazed cylindrical mahogany base Dia305 H95. A white metal scale (ecliptic) inner Dia230 outer Dia305 is supported by 12 baluster shaped brass pillars H45 has scales with months, zodiacal signs and names. Armillary hemisphere of brass bands with Equator, Tropic of Cancer and Arctic circle. Sun at centre, Mercury, Venus, Earth with Moon. Crank operated movement of the planets.

662 (HERLUFSH). Sundial. Universal. Equinoctial.
Signed: LUDWIG THEODOR MÜLLER. AUGSBURG
c1750 (fl).

Travelling. Octagonal brass base 50 across, foliate ornamentation. Compass Dia30. Silvered engraved compass rose with eight cardinal points. Hinged latitude arc (10-90°). Folding gnomon and equinoctial ring Dia45 with hour scale. Engraved with nine cities and their latitudes. Black circular pasteboard box lined with blue velvet Dia62 H20.

663 (HERLUFSH). Compass. Portable, azimuth compass.
Signed: E. Jünger / KJØBENHAVN
c1860 (fl).

Brass case Dia83 H36. The cardboard compass card has the edge, about 5mm, bent upwards, passing under four guides. Graduated twice 0-180° in 1° divisions, printed alternating red and black. The card can be arrested by pushing a knob, or by moving another knob be permanently arrested. At the side is a window 23x20 with a vertical index line.

664 (HERLUFSH). Compass.
Not signed.
1799 (acquired).

Wooden case (walnut) 90x87 with Dia79 opening for compass card, 32 points, coloured, fleur de lys at North and a heart at East. Directions given in abbreviated german. Wooden box 105x105x30 with sliding lid.

665 (HERLUFSH). Compass. Marine. Dry.
Not signed.
1889 (acquired).

Brass bowl Dia175. Gimbal mounted in wooden case 250x245x150. Compass card 64 points, fleur de lys at North, small ornament at East. The card is gimballed to the pivot suspension. One flat iron magnet fixed to the card. Wooden case 250x245x150 with sliding lid.

666 (HERLUFSH). Compass. Marine. Azimuth.

Signed: Forfærdiget 1721 af / A.O.S / Repareret i 1825 af / Jacob Saxtorph / i Odense.

1721.

Wooden box 193x193. Glass fastened with putty. Gimbal mounted with ornamentally twisted brass rods. Slit and wire sight. Coloured dry compass card, fleur de lys at North, foliage at East. Wind allegories at E,S,W; animals at NE,SE,SW,NW. Graduated 0-90-0-90°. Case oak 270x270x140, sliding lid missing.

667 (HERLUFSH). Magnet.

Permanent.

Not signed.

c1800 (g).

Seven iron rods Dia5 each shaped in U-form L200, held together by two brown pasteboard sleeves. Iron bar L63 with S-hook for suspending load.

668 (HERLUFSH). Magnet.

Permanent.

Not signed.

c1800 (g).

U-shaped iron bar, cross section 7x14 in wooden casing. Heart shaped iron bar L58 with S-hook for carrying load. Overall dimension 190x65x17.

669 (HERLUFSH). Magnet.

Permanent.

Not signed.

c1800 (g).

U-shaped L300 W190, cross section 37x7. Iron bar with hole for hook. Brass fitting at the top with conical threads presumably for supporting the complete assembly.

670 (HERLUFSH). Magnets. Bar.

Set of two.

Not signed.

c1850 (acquired).

270x23x12, in fitted mahogany box 307x83x32.

671 (HERLUFSH). Magnets. Bar.

Set of two.

Not signed.

c1900 (g).

L210, painted red and white in open oak casing. Metal beaker for iron filings.

672 (HERLUFSH). Magnet ore.

Not signed.

In leather bag, about 55x45x35.

673 (HERLUFSH). Magnets.

Not signed.

c1888 (acquired).

Demonstration of the internal structure of permanent magnets. Brass rod frame 310x90 with small points as pivots for circular Dia26 magnets painted red and white to show polarity. 30 such magnets are arranged in three rows of 10, all to be covered by a glass plate.

674 (HERLUFSH). Compass.

Deviation.

Not signed.

Mid 19th century (g).

In wooden box 205x110x30 with glass

lid. Ivory scales 30-0-30° in 0.5° at both ends of the case. Flat, pointed magnet needle L155.

675 (HERLUFSH). Determination of a magnet's magnetism and the horizontal component of the earth's magnetic field.

Signed: Cornelius Knudsen / Kjöbenhavn

1910 (catalogue).

Wooden base 500x110. Two glass plates in brass frames with illegible scales; one glass 160x35 vertical with the long side horizontal; the other 200x50 also vertical, but with the short side horizontal. Two indicating needles L350 and L250, suspended centrally on horizontal axes, seem to indicate on the above mentioned scales. But the idea and use of the instrument is not clear. Shown in catalogue, but not explained.

676 (HERLUFSH). Sextant.

Signed: I.P.CUTTS / SHEFFIELD & LONDON / SUTTON & SON
c1876 acquired.

Ebonized frame with two vertical struts and one straight horizontal strut. Rad 190. Ivory scale -4 to 137° in 20 min divisions. Ivory vernier to 0.5 min. Tangent screw and clamp. Magnifier. Brass index arm T-cross section L220. Four shades in square brass frames for index mirror, three in round brass frames for horizon mirror. Sighting telescope Dia20 L180. Extra telescope L80. Also pinhole sight. Fruitwood handle. Shaped mahogany box 270x315.

677 (HERLUFSH). Surveyor's cross.

Not signed.

Mid 18th century (g).

Brass. Each bar L270 with four sights, slit and wire for forward and reverse sighting. Cross section of brass arms 31x5. Sights H80.

678 (HERLUFSH). Savart machine for low frequency tones.

Not signed.

c1895 (acquired).

Wooden box 1430x380x260. Two brass bearings carry an axle with a crank and a wooden wheel Dia640 grooved at the periphery with a leather belt driving a grooved brass wheel Dia40 on an axle rotating a wooden bar L780. On rotation this bar passes through a fixed slit, slightly bigger than the bar producing a deep tone.

679 (HERLUFSH). Micrometer for astronomical telescope.

Not signed.

Late 19th century (g).

Threads Dia43. Two light tubes. Clamp and tangent screw. Sideway adjustment coarse rack and pinion, fine micrometer screw with silvered circular scale, black, not legible.

680 (HERLUFSH). Simple theodolite.

Not signed.

c1800 (g).

Brass dial Dia265. Sights H92. Pinhole and wire sights for forward and reverse sighting. Alidade L265 with foliate ornaments. Compass Dia50 engraved eight-point compass rose. Scales 0-180-0° in 5°, 0-360° in 0.5° and 0-180° in 0.25° divisions. Socket for pole mounting.

681 (HERLUFSH). Protractor-sector instrument; probably topographical.

Signed: jtt zu Nürnberg (sic).

Early 18th century (g).

Brass rule 350x19 with scale each unit about 29mm and transversals 1:10. On this is hinged a brass sector, twice 310x22 and with sights at the ends of both arms. The sector has diagonal scales marked "Linea. Stereometrica. Vel. Cubica." and "Lin.: Geometrica. Vel. Quadrata" and "Linea Arithmetica". Sector with sights, probably for transfer of measurements to the drawing. Semicircular brass scale 0-180° in 1° divisions and with transversals to 10 min. On one of the sector-arms is hinged a brass arm L180 without graduation, ending in a slit sight. On the back of the sector are scales marked "Lin. Circularis Diuisio" and "Lin. Metallica" and "Reduct. Corp. & Pla." and "Linea. Gradum. Quadrantis". Underneath is a brass equilateral triangle with socket as for pole mounting with wing screw.

682 (HERLUFSH). Quadrant. Surveying.

Not signed.

Second half 18th century (g).

Rectangular brass frame 110x80 with one of the short sides extended to L125. Quadrant arc has centre at one of the angles with the extension and connects the end of the short side with the long side. It has a scale 0-80° in 0.5° divisions. On one side of the rectangle is a tan scale in 0.05 units. Slit sights H50 at two adjacent sides to measure right angles. On the alidade of the quadrant is the same type of nearsight, but the foresight is H110 and can further be extended to 130 by sliding the outer part in a dove-tail groove and has a plumb bob. Black pasteboard box 145x-

135x30 ornamented by impression. Lined with red velvet.

683 (HERLUFSH). Level Y-type.

Not signed.

c1900 (g).

Telescope Dia31 L400. Rack and pinion focusing. Eye piece Dia29. Spirit level above the telescope. Horizontal dial Dia140 scale 0-360° in 15 min divisions. Two verniers to 1 min. Magnifying glass on verniers. Threads for pole mounting. Three level screws.

684 (HERLUFSH). Theodolite.

Not signed.

Mid 19th century (g).

Brass partly oxidized or black lacquered. Horizontal scale 0-360° in 1° divisions, Dia160. Vertical scale 0-360° in 0.5° divisions, Dia320. Telescope Dia25 L170, eye piece Dia 18, rack and pinion focus, objective Dia28, dustcover. Counterweight for telescope. Clamping screw on horizontal arc. Bubble level.

685 (HERLUFSH). Alidade, for plane table.

Signed: CJJ

c1800 (g).

Brass L540 W40. Brass sights H130, slit and wire. Engraved scales with transversals.

686 (HERLUFSH). Alidade, for plane table.

Not signed.

c1800 (g).

Brass L484 W40. Brass sights H140, slit and wire. Engraved scales about 1:1.5 and 1:3. Transversals.

687 (HERLUFSH). Globe. Terrestrial. Signed on cartouche (very worn): GLOBUS / TERRESTRIS / ...??... / opera / IOH.GABR.Doppelmaieri / Mathem.Prof. Publ.Norib. / exhibentur, concinnatus / a / Ioh.Georg. Puschnero. 1728.

Dia320. Brass meridian. Octagonal horizon 470 mm across, most of the affixed paper gone. Four turned wooden pillars H220 on a wooden cross with wooden plate Dia290 (Dutch type). Turned wooden feet Dia55. Track of William Dampier's voyage marked "Navigatia Wilh. Dampierii ano 1700". Southern hemisphere very worn. Overall H470.

Ref: Krog, p 114, where the globe is described in detail. 687 and 688 form a pair.

688 (HERLUFSH). Globe. Celestial. Signed on cartouche: GLOBUS / COELESTIS NOVUS / Stellarium fixarum Loca secundum / celeberrimi Astronomi Diacti...ni / IOHANNIS HEVELII / cataloguina a h...aun Chr 1730 compl. sistens / opera / IOH.GABR.DOPPELMAIERIPE / cohibitus / a Iohanne Georgio Puschnero / Chalcographo Noribergensi / A.C. 1728.

Dia 320. Brass meridian. Octagonal horizon 470 mm across, most of the affixed paper gone. Bad crack along the Equator. Four turned mahogany pillars H220, on a wooden cross with oak plate Dia 290 (Dutch type). 12 gores meeting at the ecliptic poles. Axis through the celestial poles. Badly worn. Ref: Krog, p 116. 687 and 688 form a pair.

689 (HERLUFSH). Globe. Terrestrial. Signed: ERD GLOBUS / nach den neuesten und besten Quellen / bearbeitet / BERLIN / Ernst Schotte u.Co. c1900 (g).

Probably copper sphere Dia330. Brass meridian 0-90-0° in 1°. Baluster turned black painted wooden pillar H250. Fixed at latitude about 67°. Showing ocean streams and important ship's routes. 0-meridian through Cap Verde.

690 (HERLUFSH). Tellurium. Signed: Ernst Schotte & Co Berlin. c1900 (g).

Earth globe Dia65 rotated by gear train. Moon supported on brass wire fixed under the earth globe and connected to the gear train. This is mounted on an iron tube containing the rotating axle. Worm wheel and crank rotates the system. A brass plate Dia140 has at the centre a candle as sun, paper glued to the plate depicts the Zodiac and calendar.

691 (HERLUFSH). Globe. Celestial. Signed: GLOBUM COELESTEM / pro medio seculo XIX / secundum / map-pam coelestem G.SCHWINKII / construxit et delineavit / N.ANDERSEN / praefectus decurionum / ordinis architectorum militarium / regis daniae / HAFNIAE MDCCCLI / Sumptus Fecit C.A.REITZEL / Lith. A.Bull. 1851.

Dia250. Brass meridian graduated. 24 gores to 70°, polar caps 70-90°. The gores are not fitting closely. Brass horizon ring. Brass hour ring Dia35. Turned wooden pillar on base plate Dia150.

692 (HERLUFSH). Globe. Black for drawing with crayon.

Not signed.

c1940 (g).

Dia155. The globe has a diametrical brass tube Dia10 which fits over a vertical iron rod on a stand of black lacquered wood, baluster turned on base Dia135.

693 omitted

694 (ROSENBOR Lb 2-38d).

Ordnance gauge with elevation pointer.

Signed: C.T.D.E.M.

Made by Christoff Treschler.

1617.

L397. Marked on the four sides (a) Bley Kugel.- Pfunt. C.T.D.E.M. 1617; (b) Zoll; (c) Eisen Kugel.-Pfunt.; (d) Stein Kugel.-Pfun.

695 (ROSENBOR Lb 2-38e).

Ordnance gauge.

Signed: C.T.D.E.M.

Made by Christoff Treschler.

1617.

L183. Marked on the four sides (a) Loht. Bley Kugel. C.T.D.E.M. 1617.; (b) Loht. Eisen Kugel.; (c) Loht. Messing Kugel.; (d) Loht. Zyhn: Kugel.

696 (ROSENBOR Lb 2-38i). Knife.

Signed: C.T.D.E.M. 1617

Made by Christoff Treschler.

1617.

L203. Cast, chiselled and gilt handle. On either side of the pommel a cherub's mask surmounted by scrolls. On the front and back of the grip panels chased with chain patterns on a scale ground.

697 (ROSENBOR Lb 2-38k). Pair of Compasses.

Signed: C.T.D.E.M. 1617

Made by Christoff Treschler.

1617.

L169. Chiselled and gilt metal with steel points. The joint covered by a rosette. The upper third of the legs has rectangular cross section, the middle rectangular with two faceted sides.

698 omitted

699 (KRONBORG 249:70). Sounder.

Not signed.

Mid 19th century (g).

Lead weight, open at the bottom. Octagonal cross section, slightly conical, Dia~70 L250. Towline.

700 (KRONBORG 30:84). Compass.

Signed on circle around the centre:

PER GIOSEPPE MOSCHINO IN
GENOVA

c1700 (g).

Dry. Wooden bowl Dia85 H60. Turned wooden cover with circular ornament. 32 point card, coloured in red and blue and with the needle beneath. Fleur de lys at North. Cross at East. Old notation with the initials of the Mediterranean winds, "P" (Ponente) for West, etc.

Ref: Bennett, fig 19.

701 (KRONBORG 31:84). Compass.

Chinese.

Not signed.

c1800 (g).

Turned wooden bowl Dia80 H60 and turned lid with carved chinese signs. White compass bottom. Needle shaped as an arrow, pointing south. Chinese signs along the edge, white on black background.

702 (KRONBORG 41:84). Compass.
Marine.

Signed around the centre: RASMUS
KOCH I KJØBENHAVN 1772
1772.

Dry. Brass bowl Dia182. Glass fixed with
putty. Sights for taking bearing. Gimbal
mounting in oak case 265x265x200.
Lid missing. 32 point dry card. Fleur de
lys at North, ornament at East. Allegori-
cal decorations at E,S,W showing the
winds. Graduated 0-90-0-90° with 0° at
N and S.

703 (KRONBORG 414:76). Compass.
Marine.

Signed: W.BOOSMAN. AMSTERDAM
c1850 (g).

Dry. Brass bowl Dia186. Gimbal moun-
ted in mahogany case 277x277. 64
point card, graduated 0-360°.

704 (KRONBORG 28:84). Compass.
Marine.

Signed: A.NØRHOLMS
PATENT=COMPAS MED UNIVERSAL
COMPENSATION / CORN.KNUD-
SENS ETABL KJØBENHAVN

Late 19th century (g).

Brass bowl Dia245, Kelvin card. Gimbal
mounted. A.Nørholm's Patent-Com-
pass. Deviation compensation by radial,
adjustable soft iron rods ("Intensity
multiplier").

Ref: Mittheilungen aus dem Gebiet für
Seewesen, Heft I bis IV, Jahrgang 1882.

705 (KRONBORG 20:84). Compass.
Marine.

Signed: G.W.LYTH / STOCKHOLM
c1860 (g).

Dry. Brass bowl Dia198. Gimbal mount-
ing. 64 point card, black print on white.

706 (KRONBORG 27:84). Compass.
Marine.

Signed: IVER WEILBACH / KJØBEN-
HAVN

Mid 19th century (g).

Dry. Brass bowl Dia194. 64 point card,
black print on white. Ornamented
North and East.

707 (KRONBORG 38:84). Compass.
Marine.

Signed: H.R.AINSLEY / COMPASS
ADJUSTER / CARDIFF
c1850 (g).

Dry. Black painted brass bowl Dia260.
Gimbal mounted. 128 point card, black
print on white. Ornamented North.

708 (KRONBORG 22:84). Compass.
Marine azimuth compass.

Signed: AUG.CARSTENS HAMBURG.
Steinhöft 19

Second half 19th century (g).

Brass bowl Dia240. Gimbals. Slit near-
sight, wire foresight with mirror. 128
point card, open at centre, so that two
magnets may be seen.

709 (KRONBORG 25:84). Compass.
Marine.

Signed: J.CAIL / NEWCASTLE

Mid 19th century (g).

Dry. Brass bowl Dia225. Gimbals. 64
point open card. Hand-drawn black on
white.

710 (KRONBORG 14:84). Compass.
Marine.

Signed: H.E.HOLST / KJØBENHAVN
c1870 (fl).

Dry. Brass bowl Dia220. Gimbal moun-
ted in 345x345x210 wooden case. The
card graduated 0-90-0-90°, N,S,V and Ø

is marked in simple, "modern" design. Sighting telescope Dia25 L320.

711 (KRONBORG 17:84). Compass. Marine.

Signed: A K / Seelandia
c1800 (g).

Bearing, with slit nearsight and wire foresight above a lubber's line. Wooden case 190x196; glass fixed with putty. Gimbals in wooden case. Coloured 8 point card, 0-90-0-90° in 1° divisions.

712 (KRONBORG 16:84). Compass. Marine.

Not signed.

Mid 19th century (g).

Brass bowl Dia200. Gimbal mounted in wooden case 275x275. Metal ring with magnet Dial70, silvered scale 0-90-0-90° and 32 cardinal points marked. Bottom of the bowl is visible through the ring.

713 (KRONBORG 27:79). Compass. Marine.

Signed: H.GREGORYLONDON
c1800 (g).

Brass bowl Dia280 with 30 mm broad brass rim graduated 0-90-0-90°. Pivoting alidade indexing on this scale. The alidade has only one sight (slit) H135, and may be clamped in position on the scale. Dry card with black print on white, 0-90-0-90° in 1° divisions; four cardinal points. Gimbals in wooden case 385x385.

714 (KRONBORG 295:56). Sandglass. Log glass 28 sec.

Not signed.

Mid 19th century (g).

Two bulbs joined with putty and cord.

Octagonal wooden top and bottom Dia80. Four pillars H145. Complete with sand.

715 (KRONBORG 1394:53).

Sandglass. Log glass 14 sec.

Not signed.

Mid 19th century (g).

Two bulbs joined with putty and cord. Octagonal wooden top and bottom Dia80 H125.

716 (KRONBORG 353:64). Log.

Mechanical.

Signed: T.WALKER'S / PATENT /
HARPOON / SHIP LOG

c1890 (g).

Harpoon ship log. Brass. Rotator with integral register. Five fins. Heart shaped guide fin. Three dials 0-1 mile, 0-10 miles, 0-100 miles.

717 (KRONBORG 12:84; 78:84). Log.

Mechanical.

Signed: ATLANTIC / Ship log Type
SL1 / A/S GENTAS / Copenhagen /
Denmark

c1900 (g).

Brass. Rotator with four fins, log line, rotating wheel and register for taffrail mounting. Dials 0-10, 0-100 and 0-1000.

718 (KRONBORG 85:84). Log.

Mechanical.

c1850 (inf)

Brass. Rotator with three fins, log line and taffrail mounted register. This was patented 1850 by C.G.Undén, watchmaker in Elsinore. Only few of this log were made, the principle being later successfully utilized in Thomas Walker's "Cherub" log.

719 (KRONBORG). Globe. Celestial. Signed: JOHNSTON'S / Twelve Inch Globe / Constructed and Engraved / FROM THE LATEST AUTHORITIES / BY W.& A.K. JOHNSTON / Geographers to the Queen / EDINBURGH Mid 19th century (g).

Dia300. 12 gores and circular pole caps at the ecliptic poles. Brass meridian ring 0-90-0° with 0° at the poles. Horizon ring Dia420 stating months and dates, zodiacal names, two scales: 0-90° and 90-0° for each quadrant. Four baluster turned wooden legs connected by crossbeams, supporting the meridian ring.

720 (KRONBORG K 3608). Octant. Signed on the scale: SBR c1820 (g).

Ebony frame with one vertical strut and bowed horizontal strut with three diamond shaped ivory inlays. Ivory scale -2 to 99° in 20 min divisions; vernier to 1 min. Brass fitting, reverse sighting by changing pinhole sight. Horizon mirrors for forward and reverse. Brass index arm L400 with vernier.

Made by Spencer, Browning & Rust

721 (KRONBORG K 3617). Circle. Borda.

Signed: Secretan á Paris
Trade label: H.E.HOLST COPENHAGEN
c1860 (g).

Brass. Outer Dia240 with silvered scale 0-720° in 20 min divisions, vernier to 1 min. Inner semicircle Rad70 with scale 170-0-170°. Clamping and tangential screw. Magnifier for scale reading. Sighting telescope Dia16 L140 (objective missing). Fruitwood handle. Wooden mahogany box 320x320.

722 (KRONBORG K 3589). Sextant. Signed: Fra Prof. Smith's Etablissement / Khavn No 72
c1830 (g).

Ebonized wood. Straight braces, one vertical and two crossbeams. Brass limb R350 L400, graduated -3 to 133° in 20 min divisions; vernier to 1 min. Pinhole sight in telescope-like brass tube, screw fit, suggesting that there might have been a telescopic sight. Three filters in square brass frames for alidade mirror. Brass index arm L370, T cross section, clamp and tangential screw.

723 (KRONBORG 95:79).

Sieve box for sieving sand for sandglasses.

Not signed.
c1800 (g).

Wooden box 310x160x180 with four stages separated by perforated papers with diminishing hole size descending through the case. Opening at the top with sliding lid for filling, and holes at the side to each stage for emptying.

724 (KRONBORG 1145:73). Sundial. Signed on minute dial: J.D.Hanneus / Meldorff
c1830 (g).

Mechanical universal equinoctial. Brass Dia136, graduated twice 1-12. Adjustable for latitude. A minute-dial Dia70, graduated 0-60° can be rotated by rack and pinion along the hour scale, at the same time rotating the index on the minute scale. Plumb bob in lyre shaped brass suspension. Wooden base 210x120 with four levelling screws and brass compass Dia76. Allegedly belonged to the Prince, later King Christian VIII.

725 (KRONBORG 118:79). Nocturnal.
Signed in circle on the scale: 1852
TREMESCHINI BRTE S.G.D.G. PARIS
1844 HORLOGE STELLAIRE / en
vente chez tous les principeaux Opticiens & Papetiers.

Label in the case: 1er PRIX 1867 HORLOGE

c1870 (g).

Brass with white enamel scale, graduated twice 1-12 in 15 min divisions. Brass index for "ß Ursae Minoris". Shaped cardboard case with instructions. Overall L~140.

726 (KRONBORG 1146:53). Sundial.
Universal equinoctial ring.

Signed: C.S.Hoffmann fecit Haunia
(Christian Sigfred Hoffmann 1758-1822)

c1800 (g).

Brass. Dia150. Calibrated for latitudes 90-0-90° in 0.5° divisions. Pierced bridge with pinhole gnomon sliding over calender scale and declination scale.

727 (KRONBORG 300:56). Sandglass.
1/2 hour (probably 28 sec, not working).

Not signed.

Mid 19th century (g).

Blown in 1 piece. Wooden top and bottom Dia84. Four turned pillars H160.

728 (KRONBORG). Sandglass.

Four hours.

Not signed.

Mid 19th century (g).

Octagonal wooden top and bottom 166 mm across. Six turned baluster shaped pillars. Glass blown in two bulbs, joined at the necks.

729 (KRONBORG 16:72). Chronometer. Marine.

Signed: A.Johannsen / 142 Minorities
London / No 1348.

c1900 (g).

Mahogany case 210x180x160. Gimbal mounted clock; gimbals screws into threaded socket at top of the case. Silvered dial Dia90, scale with Roman hour and Arab seconds figures. Winding dial.

730 (KRONBORG 3:84). Chronometer. Marine.

Signed: ARNOLD / LONDON No 136
c1820 (g).

Silvered dial Dia105, scale I to XII, and second scale 0 to 60. Octagonal wooden case 160 mm across. Gimbal mounted in oak case 240x240x85.

731 (KRONBORG). Globe. Terrestrial.
Signed on cartouche: 12 INCH / GLOBE / BY W.& A.K.JOHNSTON / GEOGRAPHERS / ENGRAVERS & PRINTERS / TO THE QUEEN / EDINBURGH / 1883

1883.

Compare the celestial globe no 719. Dia300. Brass meridian, scale four times 0-90°. Horizon ring with months, two calendars, Zodiac. four baluster turned legs, connected by crossbeams.

732 (HERLUFSH). Telescope.

Reflecting.

Not signed.

c1800 (g).

Tube Dia68, L350; brass, covered with fishskin (?). Eye-piece Dia20, L80. Tube mounted on brass bracket with two

thumbscrews. Universal joint connects to brass, baluster turned pillar. Three cabriole folding feet. Objective dust cover. Overall H400 L450.

733 (HERLUFSH). Telescope.

Reflecting.

Not signed.

c1800 (g).

Brass. Tube Dia68 L360. Eye-piece Dia22 L95. Screw fit red filter. Mounted on brass bracket with two thumb screws (one missing). Universal joint (screw missing) connects to baluster turned brass pillar H200. Three cabriole folding feet. Objective dust cover.

734 (HERLUFSH). Telescope.

Refracting.

Signed: G & S Merz / Utzschneider & Fraunhofer / in München

c1850 (fl).

Wooden tube (mahogany?) L1020. Brass collars. Objective lens Dia80. Dust cover. Eye piece Dia32, lens missing. Rack and pinion focus. The tube is at the middle held by two oxidized brass collars fixed to a bracket with joint, and socket for pole-mounting. Socket Dia35 L140.

735 (HERLUFSH). Telescope.

Gregorian.

Not signed.

c1800 (acquired 1803).

Tube sheet iron Dia130 L845. Brass collars at both ends. Dust cover Dia112. Eye piece Dia30 L110. Mounted on vertical circular brass disc Dia182, racked for vertical adjustment by worm gear. Socket for pole mounting. Mirrors not fitted. Poor condition.

736 (HERLUFSH). Steam engine.

Sun-driven.

Signed: Phywe

c1900 (g).

Brass parabola Dia280 with small boiler mounted at the focus. Integral primitive engine with rocking slide valve, and axle to a drive wheel outside the parabola. Elevation of the parabola is adjusted by a small worm wheel. Cup and small funnel for filling the boiler. Glass cover and cardboard protecting cover. Sheet iron base 335x125. Overall H200. In working order.

737 (HERLUFSH). Typewriter.

Signed: "15"

Probably made by C.P.Jürgensen (1838-1911).

c1875 (g).

Malling Hansen's ball-typewriter. 54 types, all mounted in brass sphere. Printing at the centre of the sphere, where paper is placed. Mounted in mahogany case 245x220x245. Brass handle and hooks for locking. This was invented in 1869 by H.R.Malling Hansen, patented 1872 jointly with C.P.Jürgensen.

738 (HERLUFSH). Cloud chamber.

Signed: Struers

c1950 (g).

Cast iron ring with glass on both sides; rubber ring gaskets and cast iron rings. Connection for suction pump. Inside, visible through windows is a radioactive source. Along the inner surface of the ring is felt, to be wetted by volatile fluid (spirit). Electric terminals.

739 (HERLUFSH). Vacuum chamber.

Wilson apparatus to visualize alpha particles.

Not signed.

c1936 (catalogue).

Wooden base 200x123 with upright wooden plate 390x123, on which is mounted a glass cylinder Dia85 L210, closed air-tight with cast iron rings and rubber seals and held together by three bolts L240. Underneath is a rubber suction ball and cock with handle. In the glass tube a fluid now stiffened (sterin?). Overall H410.

Ref: Catalogue from H.Struers chemiske Laboratorium, Copenhagen, 1936, p 146.

740 (HERLUFSH). Galvanometer.

Weinhold's.

Signed: Max Kohl / Werkstätten für Präzisionsmechanik / Chemnitz i.S.
c1920 (catalogue).

Wooden base 180x98 with two brass terminals for electric connections. Two glass vessels Dia8 H40 containing mercury connected by capillary L150. Transparent scale 7 cm along the capillary for projection.

Ref: Kohl III, cat. no. 95064.

741 (HERLUFSH). Crystal models.

Box of 17 models.

Not signed.

c1900 (g).

Probably two missing. Two made as lattice models, the rest are cut in wood and painted. Sizes 70 to 100. Pasteboard box 370x235x60.

742 (HERLUFSH). Heron's fountain.

Not signed.

c1820 (g).

Sheet metal painted black with gold à la greque. Top and bottom containers Dia160 L135 connected by two tubes

Dia24 L240. At the top is a nozzle for water spray. Opening with cork stopper for water filling.

743 (HERLUFSH). Communicating vessels.

Not signed.

c1840 (g).

Two glass tubes Dia48 and 34 L300 connected at the bottom by a brass tube. At the top the tubes end in brass cylinders with pistons, one Dia32, the other Dia14. The instrument shows the relation between pressure and force.

744 (HERLUFSH). Compressibility of water. Ørsted's Piezometer.

Not signed, but almost certainly made at the workshops of the Polytechnical University, Copenhagen. Ørsted's experiments took place 1822-1826. This instrument is one of a number distributed to teaching institutions.

c1850 (g).

Glass vessel Dia100 H280 is fastened to wooden base plate 310x310 by a wooden collar Dia245 holding the base rim of the glass. At the top of the glass is a brass collar with a cylinder Dia48 L130 and piston, which can be operated by a screw with a crank. The instrument is not complete, as the internal glass container and manometer is missing.

Ref: Meyer, vol II, p 310.

745 (HERLUFSH). Leslie cube.

Not signed.

Mid to late 19th century (g).

Brass 90x90x90. the sides are shiny brass, dull brass, white painted, black painted. At the top a spout Dia24 L25 for adding hot fluid.

746 (HERLUFSH). Dilatation meter.
Signed: C. Weitzmann's Etabl / Hille-
rød-Kbhvn
c1900 (catalogue).

A copper tube (for dilatation of copper) can be heated by letting steam through. The tube is suspended with one end fixed and the other moving a lever system with a pointer indexing on an arc with a scale. The movement is multiplied about 100 times (adjustable). Wooden base 580x25. Overall H270. Tubes to be heated Dia10 L405.
Ref: Weitzmann, p 21, no 108.

747 (HERLUFSH). Dilatation meter.
Signed: Cornelius Knudsen / Kjöbenhavn
c1920 (g).

A tube Dia19 L400 is supported in Y-brackets on two brass pillars Dia20 on a wooden base 570x120. The tube is positioned by a set screw at one end, the other end pressing against a lever system with a pointer indexing on a scale 0-60. The movement is multiplied about 100 times. Heating by steam being led through the tube.

748 (HERLUFSH). Dilatation meter.
Not signed.
c1900 (g).

A rod of the metal to be tested is suspended between a set screw and a pivoted pointer pushed by the rod about 5 mm from the pivot. Pointer L300. The movement is thus multiplied by about 60. Brass scale 10-0-10 with no units. Heating by spirit contained in a long brass tray. Wooden base 500x60.

749 (HERLUFSH). Dilatation meter.

Signed: Corn. Knudsen / Kjöbenhavn
c1940 (g).

Wooden base 550x160 has two Y-supports for a copper tube, Dia 48 with connections for letting steam in and out. The test rod is mounted inside the tube between a fixed stop and a micrometer screw. The bar connecting the two ends is surrounded by a shiny box in order to reflect heat from the steam tube. Test rods of iron, brass and copper.

750 (HERLUFSH). Barometer.
Aneroid.

Signed: JULIUS NISSENS EFTERFØLGER / Kjöbenhavn
c1885 (fl).

Glass front Dia130. Brass house H50. Scale on glass front 24-29 (inch) and 64-79 cm (Hg), but no units stated. 76 (cm Hg) corresponds to $28\frac{1}{12}$ inch. Weather specifications in Danish. Brass ring for suspending the instrument.

751 (HERLUFSH). Pressure gauge.
Bourdon tube.

Signed: Cornelius Knudsen / Kjöbenhavn
c1890 (g).

(Eugene Bourdon, 1808-84). Demonstration model. Brass base Dia68. Case Dia120. Brass bourdon tube (dented) operates a lever turning a toothed sector meshing with a cogwheel on axle with a pointer. White metal dial. Scale -1 to 0 to +6, no units.

752 (HERLUFSH). Fire engine.
Model.
Not signed.
c1862 (acquired).

Wooden black painted box 340x150x150. Upon this is a copper cylinder Dia40 L120 ending in a narrower copper tube dipping in water tank below. The water hose made of layers of coarse cloth and iron spiral is connected to a spout extending from the cylinder via an air vessel. The pump lever is mounted on a plate on four brass pillars H125, baluster turned, on the water tank.

753 (HERLUFSH). Hydrometers. Set of four.

Not signed, but probably G.F.Brander, who produced hydrometers like these in 1777.

c1777 (g).

Glass. Cylindrical stems with scales giving weight of 1 "Wiener Cubic Schuh in Wiener Pfund". Under the stems is a large glass sphere Dia43 and under this a small glass sphere Dia24. The spheres are coloured black for specific gravity greater the water, red for less. Four scales, (a) 50.75 to 56.75; (b) 45.0 to 49.5; (c) 55.75 to 58.5; (d) 57 to 65 (Vienna pounds per Vienna cubic foot). A thermometer (no scale) is included in the set. Wooden box, lined with soft fabric 220x220x75. Paper table "Tafel vor die Brandveine". Ref: Brachner, p 282.

754 (HERLUFSH). Hydrometer.

Not signed.

c1875 (g).

Glass. Mercury weight, small bulb at the end of a long stem. Pear shaped float bulb Dia32. Glass pan at the top. Overall H210. Pasteboard case Dia40 L270.

755 (HERLUFSH). Hydrometer.

Nicholson's.

Not signed.

Second half 19th century (g).

Glass. Pear-shaped bulb Dia34. Glass pans at top Dia32 and bottom Dia35. Small bulb weighted with mercury (covered with brown powder-substance?). Overall H220. Pasteboard case Dia42 L330.

756 (HERLUFSH). Hydrometer.

Signed: Aräometer nach specif Gewicht Temp 15°C / H. Struer's chemiske Laboratorium Kjøbenhavn. c1910 (catalogue).

Glass float. Oblong float bulb. Stem Dia8 L160. Graduated 0.700 to 1.000 in 0.01 divisions. Weight bulb black. Overall L280. Pasteboard case Dia20 L310.

Struers, p 125.

757 (HERLUFSH). Hydrometer.

Signed: Aräometer nach specif. Gewicht Temp 15°C / H. Struer's chemiske Laboratorium Kjøbenhavn c1910 (catalogue)

Glass float. Oblong float bulb. Stem Dia11 L165. Graduated 1.000 to 2.000 in 0.01 divisions. Weight bulb black. Overall L270. Pasteboard case Dia23 L270.

Ref: Struers, p 125.

758 (HERLUFSH). Hydrometer.

Signed, printed paper: G.F.Brander fecit Aug. Vind.

c1777

Glass float. Stem Dia23 L98. Pear-shaped bulb Dia55 L65. Weight bulb Dia65 weighted with lead shots. Paper scale "Schwere eines Wiener Cubic Schuh",

graduated 56 to 69 in 1/4 divisions. Also scale "Wiener Pfund" and "Satz in einem Wiener-Cubic-Schuh", 0 to 32 in 1/2 divisions. Paper scale in the stem, which is closed by a cork stopper. Turned, shaped wooden case in two parts screwed together Dia74 L260.

Ref: Brachner, p 286.

759 (HERLUFESH). Tantalus cup.

Not signed.

c1875 (g).

Gilt sheet iron. Cup Dia126 H60. Pillar Dia16, base Dia98. In the beaker is a wood cut painted figure (chinese?), bending over as in greeting. The wood has a hole fitting over a siphon at the bottom of the beaker. Figure H84. The siphon is made of soldered brass tube.

760 (HERLUFESH). Diving bell. Model.

Not signed.

c1800 (g).

Wooden model of catamaran with structure between the pontoons for lowering the bell by means of a windlass. Glass bell Dia110 H120 with brass cap at the top with hook for cord. Lower edge of the bell has a brass rim with six hooks for weights. Inside the bell is a figure about H60.

761 (HERLUFESH). Hydrometer (demonstration model or toy?).

Not signed.

c1800 (g).

Ivory, turned to the shape of spinning top with a stem Dia3,5 L65, graduated 1 to 12; no units or purpose stated. Sphere Dia34. Wooden case turned and shaped max Dia45 L123.

762 (HERLUFESH). Hydrometer.

Nicholson's.

Not signed.

c1875 (g).

Painted sheet iron, Dia50 H280. Cylinder with conical bottom. Conical bucket weight below.

763 (HERLUFESH). Pascal's vases.

Not signed.

1876 (acquired).

Sheet iron trough 245x245x185 lacquered white inside and placed in wooden box. Spout at the bottom for emptying. A wooden upright holds a balance beam with a pan Dia80 for weights and a cord to a circular brass plate Dia60, which is thus held against a seat of a brass stand (Boyle's valve) on which may be fitted glass vessels of equal height but varying shapes. Three glasses.

764 (HERLUFESH). Pascal's vases, communicating vessels.

Not signed.

c1800 (g).

Three glass vessels H262 (one cylindrical, two conical) to be placed on a wooden stand placed in a wooden trough 320x240x55. The stand has a brass ring fitting water tight to a rim on the glass vessels. A U-tube, one branch connected to the brass fitting on the stand acts as manometer and level indicator.

765 (HERLUFESH). Hydrometer.

Signed: Carl Nielsens Efterf. F.E.Sørensen Kjöbenhavn.

c1900 (g).

Glass. Stem Dia11 L205 with paper scale 0 to 70 in 1 divisions "Aräometer für Schwefelsäuren. Baumé Temp 14°R°."

Bulb Dia19 is extended downwards by a tube Dia9 L60 to the weighted bulb Dia19. Extension and weight black. Overall L308. Cardboard case Dia30 L365.

766 (HERLUFSH). Thermometer.

Mercury in glass.

Signed: Julius Nissen Efterf. Kjöbenhavn.

c1885 (fl).

Dia 20 L300. Bulb Dia12. Glass ring at the top for fastening cord. Paper scale -30 to 80 Réaumur. Cardboard case Dia25 L315.

767 (HERLUFSH). Thermometer.

Mercury in glass.

Not signed.

c1900 (g).

Dia18 L255, bulb Dia11. Copper cap at the top with small ring for cord. Scale on internal porcelain -30 to 60 Réaumur. Cardboard case Dia34 L280.

768 (HERLUFSH). Thermometer.

Not signed.

c1920 (g).

Glass. Dia24 L315. Oblong bulb Dia8 L33 with black liquid fill. Scale on internal porcelain 0-130°C. Brass cap at the top Dia25 L18.

769 (HERLUFSH). Archimedian screw.

Not signed.

Early to mid 19th century (g).

Sheet iron painted box 300x120 with built-in shelf 80 mm above the bottom. A glass tube closed by brass plates at both ends has a central axle which at the lower end is supported by a bearing, at the upper end has a crank.

Inside the glass tube is a wooden spiral, ending at the top brass plate which has an opening. A supporting brass arc adjusts the slant of the screw. The wooden spiral is grooved for a cord as seal to the glass. Four claw feet, gold painted.

770 (HERLUFSH). Hydrometers.

Glass. Collection of seven.

Not signed.

Early to mid 20th century (g).

(a) Stem Dia4 L100. Scale 1.1 to 1.25. Flat bulb 85x14x7. Lead shots. Wax sealed.

(b) Stem Dia4 L105. Scale 1.12 to 1.22. Flat bulb 115x15x6. Wax weighted.

(c) Stem 120x16x9. Scale 1.12 to 1.22. Flat bulb 120x16x9. Wax weighted.

(d). Stem Dia6 L115. Scale 11 to 1 to 11. Pear-shaped bulb Dia34 L40. Mercury weighted.

(e) Stem Dia4 L65. Scale 1 to 12. Pear-shaped bulb Dia24 L27. Shots weighted.

(f) Stem Dia5 L65. Scale 1.000 to 1.050. Bulb Dia18 L50. Shots weighted. Signed "Urin-Prober n. Dr Vogel Tp 15°C."

(g) Green glass, no stem. Pear-shape Dia26 L55. Shots weighted.

771 (HERLUFSH). Hydrometers. Set of three alcoholometers. Not signed.

c1900 (g).

Scales according to Richter and Tralles.

(a) Scale "R" 35 to 60 "Tr" 45 to 75

(b) - 65 to 85 - 76 to 95

Marked "Alkoholometer Richter u. Tralles Temp 0 - 12_ R°."

(c) (broken) Scale 9 to 0 to 10. Marked: "Für jeden Grad über 0 wird 1 pr Ct ab und für jeden unter 0 1 pr Ct zuge-rechnet nach Richter".

Cylinder glass with brass foot Dia33

H200. Wooden case 230x105x50, black fishskin covered with golden ornaments. Suède lining.

772 (HERLUFSH). Hygrometer.

Daniell's.

Not signed.

c1825 (g).

Wooden stand, black painted, base Dia90 H165, turned pillar supporting ivory thermometer, scale -30 to 55, mercury fill. Black bulb with golden band, built-in thermometer, scale -20 to 55. Clear ball covered in muslin. Very good condition.

773 (HERLUFSH). Hydrometers. Set of five plus thermometer in box.

Second half 19th century.

(a) "Alkoholometer nach Richter und Tralles", scale with built-in thermometer, L358, scale -10 to 0 to 7, 0 equals 12½° Reaumur.

(b) "Aräometer für schwerere Flüssigkeiten als Wasser.." verf.v. F.A.Greiner & Co in Berlin, 1.045 to 1.995. L335.

(c) same as (b) except scale 1.000 to 1.440

(d) "Aräometer nach Beaumé für Saltze und Säuren..." verf.v.F.A.Greiner & Co i.Berlin. Scale 0 to 75.

(e) "Areometer (Volumeter) for tunge-
re Vædske end Vand efter Beaumé".
"C.Weitzmann's Etablissement"
Cylinderglass with brass base Dia25
H340.

Probably supplied by C.Weitzmann, Hillerød, Denmark, who made one of the hydrometers (signed). The firm may have imported the rest from Germany and sold the complete set in the box. Mahogany box 390x210x70 with lock. Lined with brown velvet.

774 (HERLUFSH). Thermometer.

Mercury in glass.

Not signed.

1876 (acquired).

"August's freezing Thermometer".
Stem Dia14 L275. Porcelain scale -30 to 50° Celcius in 1° divisions. The bulb is immersed in a clear fluid contained in a glass bulb Dia25 L50. At the top a brass cap with ring for cord. Wooden case, black fishskin covered, red velvet lining, 335x60x50.

775 (HERLUFSH). Balance, specific gravity.

Signed on directions for use: F.Sartorius, Göttingen

c1900 (g).

Hydrostatic balance. Brass pillar on heavy cylindrical base with three feet, one adjustable for level. The pillar expands upwards to a platform with knife-edge bearing and an ivory scale 7-0-7. Beam with pointer and weights. Bearing for pan is missing. Directions for use attached. Wooden box, fitted 265x245x95.

776 (HERLUFSH). Thermometer.

Bimetallic.

Signed: Joh. Holzman

Mid 19th century (g).

In the form of a pocket watch Dia50. The face is a 9 mm wide enamelled ring with scale -30 to 80, and further 10,20,30... At 0 marked "Eispunkt", at 40 "REAUMUR", at 80 "SIEDPUNCT". The bimetallic steel and brass spring, is placed along the edge of the case. The movement is transmitted via a toothed sector to a cogwheel on same axle as the pointer. The rear cover is glass.

777 (HERLUFSH).

Balance and weights. Coin balance.

Not signed.

c1800 (g).

Iron beam Dia2 L110. Two brass pans Dia35 suspended in three cords. One pan marked at the centre 30 (or 50 ?). Four square weights with stamped denominations; four smaller weights, sheet brass, stamped III,VII,VIII,VIII. Wooden box 132x60x25 has marked spaces for the weights but no key to the denominations.

778 (HERLUFSH). Balance. Coin.

Not signed.

Post 1873 (Danish coinage act introducing the Krone. Main coins were 10 and 20 Kroner).

Brass beam L120. Open box beam ends. Brass gallows L60. Knife edges. Two brass pans Dia35 in three cords. Steel pointer. Five weights, one missing.

(a) One marked "DÄN G-M 20 Kroner",

(b) Two marked "DÄN G-M 10 KRONER",

(c) Two marked "1 DOLL".

Black fishskin box, fitted 190x82x25 lined with blue velvet.

779 (HERLUFSH). Weights. Set of nine in box.

Signed, box: SARTORIUS-WERKE

A.G. GÖTTINGEN

c1900 (g).

Tweezers white metal (or silvered brass) with ivory points. Cylindrical brass weights with baluster-shaped knobs marked 100,50,30,20,10,5,3,2,1. Obviously grammes. Fitted wooden box 143x80x45 lined with black material.

780 (HERLUFSH). Weights. Set of 14 in box (four missing).

1863 acquired.

Brass, cylindrical with baluster-shaped knobs. Certified, stamped "JK" for "Justerkammeret", crowned "C5" for Christian V and three towers, the town mark for Copenhagen. The weights are marked "1 PUND", "50 QVINT", two "20 QVINT", "10 QVINT", "5 QVINT", two "2 QVINT", "5 ORT", two "2 ORT", "IA" AND "I". Fitted boxwood case 170x100x60.

781 (HERLUFSH). Balance. Spring.

Not signed.

1880 (acquired).

Steel. V-shape with two circular arcs sliding along each other, one with index mark, the other graduated 10,25,50,100. Overall dimension 240x220.

782 (HERLUFSH). Balance. Spring.

Signed: SALTER'S / SYSTEM / SPRING BALANCE / PATENT

1880 (acquired).

Spiral spring in steel casing with brass front graduated 0-12 KILO (meaning kilogrammes) and 0-25 pund. L300

783 (HERLUFSH). Balance. Steelyard.

Not signed.

c1800 (g).

Iron. L300. Two ranges by turning the steelyard and holding at another fulcrum. The scale is marked with cryptic chisel marks.

784 (HERLUFSH). Balance. Steelyard.

Signed: ISH / 1903 (possibly a local blacksmith)

1903.

Iron, handsmithed. L600. Iron bar cross section 10x8, ending in iron button riveted on. The other end is flat hammered iron about 150x35x8. Two triangular handles in two fulcrums. Two ranges 1-13 and 12-50 Danish pounds.

785 (HERLUFSH). Prism on stand.

Not signed.

Mid to late 19th century (g).

Expanding brass pillar Dia14 H230 to 380 held in position by thumb nut and conical threads. Base Dia100. Brass joint to L-shaped bracket, which holds the prism on a rotatable axle. The prism is right-angled 30x30x45 H70.

786 (HERLUFSH). Lens on stand.

Not signed.

Mid to late 19th century (g).

Plano-convex. Dia52. Oxidized brass circular frame. Mounted in stirrup with two thumb screws. Brass stand base Dia100. Expanding brass pillar H230 to 380 held in position by thumb nut and conical threads.

787 (HERLUFSH). Prisms on stands.

Two.

Not signed.

Mid to late 19th century (g).

(a) Equilateral triangle, sides 42 H80,
(b) right-angled 30x30x45 H70.

788 (HERLUFSH).

Reflection apparatus.

Signed: CORN. KNUDSEN / KJØBENHAVN

c1900 (g).

Plane mirror 43x37 in oxidized brass frame screwed to circular brass plate Dia43 with index pointer at right angle

to mirror. Circular scale radius 135 graduated 90 to 0 to 90° in 10° divisions will indicate the reflected ray of light to be double the mirror angle as indexed. Wooden base radius 135.

789 (HERLUFSH). Mirror. Concave.

Not signed.

c1800 (g).

Dia207. Glass in circular black lacquered frame. Brass stirrup. Brass expanding pillar. Black lacquered wooden base Dia220 with baluster-turned wooden pillar H150.

790 (HERLUFSH). Microscope, compound.

Not signed.

Mid 18th century (g).

Brass. Folding tripod. Baluster-like pentagonal pillar H90. Joint with wing-screw to bracket for dove-tail guide for plano-concave mirror below the stage. Stage with sprung plate for object glass. Bracket for lens (lens missing). Two Lieberkuhns. Overall H240. Brass container 668x25x15 for ivory object glasses. Focus by sliding the stage. Two scales "S" 1-7 (non-linear) and "D" 1-7 (non-linear, but bigger units). The tube with the optics is missing. Wooden box, fishskin covered, beige velvet lining, 140x140x50. Probably made by Francis Watkins, London.

Ref: Moe, p 103; fig 6.10 shows an identical instrument.

791 (HERLUFSH). Microscope, compound.

Signed: Depot af Mikroskoper / fra / Ernst Leitz i Wetzlar / Cornelius Knudsens Etablissement / Kjøbmagergade 15. Kjøbenhavn.

Made by Leitz, Wetzlar.

c1900 (g).

Brass. U-shaped black base. Tube Dia28. Rack and pinion focus with micrometer (1/100 mm) fine adjustment. Circular mechanical stage Dia100. Three objectives in brass containers. Substage mirror Dia50 flat and concave. Abbe's condensor on a common sleigh with iris diaphragm and mirror. Three eye-pieces. Wooden box 340x190x165 with drawers for eye pieces, objectives and accessories. Intarsia door.

792 (HERLUFSH). Microscope.

Compound.

Not signed. (probably Nuremberg).

1799 acquired.

Oak box base 55x55x123 with open front giving access to plane mirror Dia33 in wooden frame, mounted on wooden horizontal axle. Slits in the box for specimen sliders. Pasteboard tube Dia34, push focusing, turned eye piece. Wooden nose piece Dia20-35. Eye lens and lens in nosepiece are missing.

793 (HERLUFSH). Spherometer.

Signed: Prof Smiths Etablissement / Kjöbenhavn.

c1810 (g).

Three steel pointed legs H50 on sturdy tripod with vertical mounted scale 60-0-80 no units. 0-80 has a length of 32,5mm. Central steel spindle Dia9 L87 with brass circular dial plate Dia159; knurled knob Dia47 at the centre. Scale along the edge 0.000-2.000 in 0.001 divisions. Distance between feet in unilateral triangle 167 mm. Frosted glass plate for zeroing, octagonal with sides L90 constitutes the top of a wooden

box, octagonal, 238 mm across H196.

Hinged lid with brass handle.

794 (HERLUFSH). Microscope.

Compound.

Not signed.

Mid 19th century (g).

Brass. Cylindrical base Dia78 with opening at the front to concave substage mirror. Double tilting stage with object wheel with four holes. Brass side pillar Dia15 H40 supports circular bracket for body tube Dia31 H75. Two eye pieces. Fitted wooden box 253x112x90.

795 (HERLUFSH). Microscope.

Compound.

Signed: H. E. Holst /

Østergade No 50 / Kjöbenhavn.

c1865 (g).

Cast iron V-shaped base. Pivoting limb supports bracket with substage concave mirror, and lever-stage of anodized brass. Tube Dia30 with nose piece adjustable by rack and pinion. Overall H300. Mahogany box 205x125x105. Written in the lid: "RM". French manufacture.

796 (HERLUFSH). Microscope.

Compound.

Not signed (probably French).

Late 19th century (g).

Lead-weighted brass foot, Dia70. Compass joint to limb Dia70 H110. Substage concave mirror. Fixed brass stage W54. Oxidized brass bracket on top of the limb holds brass tube Dia25 in which the inner tube is adjustable by rack and pinion. Overhead condensing lens, bull's eye, in oxidized brass frame. Overall H230. Fitted wooden box 230x120x85.

797 (HERLUFSH). Microscope. Solar.
Signed: DOLLOND – LONDON
c1790 (g).

Brass plate 119x119. Two screw holes for attachment to window shutter. Hinged rectangular mirror 180x45. Mirror slant adjustable by worm gear. Tube Dia38. L120. Five projection lenses extant out of six. Condensing lens. Spring holder for transparent objects. Rack and pinion focusing. Set of five objectglasses in brass and ivory frames. Mahogany box, fitted, 310x160x70.

798 (HERLUFSH).

Refraction demonstration.

Signed: Cornelius Knudsen / Kjøbenhavn

c1900 (g).

Semicircular glass tray Dia210. The flat diameter side is blackened except for a 2mm vertical slit at the centre of the circle. The circular part is frosted glass H75 and graduated 90-0-90° in 5° divisions. Standing in cut-out wooden base plate 255x150x35. Educational instrument.

799 (HERLUFSH). Zoetrope.

Signed: Anschütz' Tachyscope / with 10 photographic / series. (printed on the lid, repeated in German, French and Spanish)

c1870 (g) (marketed after 1867).

Pasteboard box Dia230 H60 containing turned wooden foot Dia98 and turned wooden pillar. Brass tube fitting loosely over the pillar has a Dia48 wooden disc on which the lid of the cardboard box can be fastened upside down and rotated by pushing. Ten picture reels with slots around the edge can be placed inside the lid and viewed through the slots.

800 (KRONBORG).

Sounder. Mechanical.

Signed: Edwd Massey / LLL Patentee / London, 6311

c1840 (g).

Brass base plate with four fin rotator with worm drive of brass gear with numerals 1-10. Rotates when submerged, locked when hauled in. Mounting plate with fixing screws for weight and line. Overall 180x120.

Ref: Randier, p 69.

801 (KRONBORG). Sounder.

Signed: T.WALKER'S PATENT / 4185

c1880 (g).

Oval brass base plate with four-fin rotator, worm drive of brass gear with numerals. Octagonal lead weight L~350. Overall dimensions ~200x120.

802 (KRONBORG 415:76). Log. Reel.

Not signed.

Mid 19th century (g).

Dia230 L~500 with turned handles L130. Logline. Log ship with locking stopper.

803 (KRONBORG 780:54).

Traverse board.

Not signed.

Mid 19th century (g).

Wood. ~350x200.

804 (KRONBORG 62:84).

Mirror. Azimuth.

Signed: CORNELIUS KNUDSEN
KBHVN

c1900 (g).

Thomson's. Oxidized brass frame 200x145x150 to place on compass. Bubble level. Spring pinion to fit centre of compass glass. Shadow pin and glass

prism. Finger screw adjustment of prism.

805 (KRONBORG 2195:52).

Telescope. Refracting.

Not signed.

Second half 19th century (g).

Galilean. One draw. Brass covered with black material. Objective Dia40. Tube L55. Total L70-100. Shaped pasteboard box L82; the lid lined with green material.

806 (KRONBORG 142:55).

Parallel rule.

Not signed.

c1900 (g).

Ebonized wood. Brass fittings. L450.

807 (KRONBORG 10:84).

»Radiograph«.

Signed: HENRY HUGHES & SON /
MARINE OPTICIANS / 59 FEN-
CHURCH STREET, LONDON

c1910 (g).

Marked: "AN INVALUABLE AID TO
SAFE NAVIGATION / THE / RADIO-
GRAPH / Verifies the Ship's Position. /
Shows the Error of the Compass. /
Gives the Distances of Fixed Objects..-
.etc...Price, complete in case (with full
instructions) 8/6".

Wooden frame 275x250 with hinged
rule and angle scale on glass plate. Bea-
rings are transferred to the glass plate,
which is placed on the map to determi-
ne ship's position.

808 (KRONBORG 81:84). Barometer.
Aneroid.

Signed, impression on rear side: PHBN
(in a circle) and 1869 (scratched).

c1860 (g)

Marked: Holosteric Barometer.

Brass case Dia165 H50. White metal
bellows Dia70. Scale 27.9 to 31.1 in
0.02 divisions. Two glass thermo-
meters, curved along the lower left and
right quadrants; the left, spirit, -5 to
45°C, the right, mercury, 10 to 130°F.
Arrowed brass set pointer and blued
steel indicating pointer with arrow and
crescent. The scale is open at the cen-
tre, so that the mechanism may be
seen.

809 (KRONBORG 2293:51).

Traverse board.

Not signed.

Late 19th century (g).

Painted and carved wood L310 W225.
32 course directions, speed in knots
and fathoms.

810 (KRONBORG 92:84). Storm glass.

Not signed.

Late 19th century (g).

Shaped wooden board, painted white
with black inscriptions in Danish. Ther-
mometer, glass, -28 to 50°C.

Ref: Banfield III p 144.

811 (KRONBORG 216:39). Barometer.
Marine.

Signed: L. SIMON /
SOUTH SHIELDS

c1860 (g).

Brass cistern. Mahogany board L910.
Suspended in gimbals in wall mounted
stirrup. Scale, slanted, probably ivory,
covered by glass; 27 to 31; "Change" at
29.5; 0.1 divisions with vernier to 0.01.
Text in English. Thermometer mercu-
ry in glass L155; scale 20-130°F and -5 to
40°C.

812 (KRONBORG 8:84). Protractor.
Signed, engraved on circular plate:
Transportør / Bauer constr
Signed, indent on rule: CORN.KNUD-
SEN / KJØBENHAVN
Late 19th century (g).
Brass. Circular with sector and radial
extension rule. Dia150. Scales 0-180°
and 0-255°. The sector is graduated 0-5
and 5-0; vernier to 0.5°.

813 (KRONBORG 79:79). Sextant.
Box.
Signed: Secrétan a Paris
Trade label: MAISON LEREBOURS &
SECRETAN / SUCCESEUR / Optici-
en de S.M.l'Empereur / de l'Obser-
vatoire & de la Marine / MAGASINS:
13, PLACE DU PONT-NEUF / ATELI-
ERS: 9, RUE MECHAIN, FAUB St
JACQUES / PARIS
c1860 (g).
Brass Dia70 H60. Silvered scale 0-120°
in 20 min divisions; vernier to 30 sec.
Magnifier. Red and grey shades. Arti-
ficial horizon black glass in brass frame
Dia68. Three screw levelling feet. Spirit
level missing. Both in fitted mahogany
box 175x110x56.

814 (KRONBORG 381:48).
Anemometer.
Signed on anemometer: 48
Signed on stopwatch: 97
Made by Cornelius Knudsen, Copen-
hagen (inf)
c1900 (g)
Brass wind channel Dia50 L20. Rotator
with four mica vanes, each about
15x10. At the centre is a register Dia20;
silvered scales 0-10 in 0.1 divisions, and
0-6 in 0.1 divisions. Expandable brass
stem with stopwatch near the handle

Dia48 H22. Overall L330. Wooden box
380x80x50 with hinged lid, fishskin
cover, mauve velvet lining.

815 (KRONBORG 1149:53). Diptych.
Not signed (probably English or Amer-
ican).
Mid 18th century (g)
Wood. 92x58x14 (closed). Eight point
compass Dia30. Deviation indication.
Arrow shaped needle. Latitude scale
34-56°. Dial with Latin and Arab nu-
merals on the horizontal scale, only
Roman on the vertical. Latitudes of 64
towns in America, England, Spain,
France, Italy and Germany, spelled in
English. Arabesque decorated.

816 (KRONBORG 295:70). Rule.
Not signed.
Mid 19th century (g).
Boxwood. 610x45. Six scales plus one
with transversals. One edge chamfered.

817 (KRONBORG 174:77).
Parallel rule.
Signed: HEATH & CO Ltd CRAYFORD
LONDON / CAPT. FIELD'S IMPRO-
VED / CORNELIUS KNUDSEN
KJØBENHAVN
Mid 19th century (g).
Boxwood. L460 W35 (each). Brass fit-
tings.

818 (KRONBORG 50:84). Deflector.
Signed: C.CLAUSEN'S PATENT COR-
NELIUS KNUDSEN KBHVN
Trade label: Kgl Hof Instrm / CORNE-
LIUS KNUDSENS ETB / Nautisk Afde-
ling / Köbenhavn
c1900 (g).
For determining the deviation in foggy
weather. Brass circle Dia131. Silvered

scale 0-90-0-90° in 1° divisions. Three arcs L80 protruding from the periphery for centering the instrument on the compass. Inside the brass circle slides another brass ring with a cross bar supporting two magnets, with adjustable distance from the centre by right and left threaded screws. Mahogany box 205x163x140 with leather handle.

819 (KRONBORG 380:48).

Station pointer.

Signed: TROUGHTON & SIMMS / LONDON

c1850 (g).

Brass. Circle Dia160. White (probably ivory) dial, scale 0-180-0° in 0.5° divisions; verniers to 1 min and clamps on the movable arms. One magnifier. Brass arms L310 (from centre). Mahogany box 415x180x90.

820 (KRONBORG 2292:51).

Telescope. Refracting.

Not signed.

Late 19th century (g).

One draw. Wooden tube Dia55-48 L620, leather covered with painted signal flags decoration. Draw tube Dia32 in three parts, all lenses missing.

821 (KRONBORG 112:79).

Artificial Horizon.

Signed, trade label: F.BRYDE / Mechanicus & Opticus / Store Strandstræde No 99 i Stuen.

Mid to late 19th century (g).

White metal tray in mahogany case Dia145 H34; turned mahogany cover. Boxwood vial for mercury Dia54 H70 with spout and screw fit cover. Roof shaped cover 180x145x90, mahogany with two glass panels, triangular ends and

circular cutout at the bottom to fit over the tray. Wooden box 176x190x168.

822 (KRONBORG K 3584). Octant.

Small Hadley's.

Signed on the nameplate: I.Clephin

Maker London / John Spurrier 1792.

Signed on the scale: SBR (signature for Spencer, Browning and Rust)

1792

Ebony frame with one vertical strut and bowed horizontal strut. Rad170 with three diamond shaped ivory inlays. Brass index arm L187; clamp and tangential screw. Ivory scale -2 to 108° in 30 min divisions; vernier to 1 min. Double pinhole sight with sliding sector shutter. Three shades for index mirror. Brass pencil holder and ivory note plaque on the rear. Shaped wooden box 220x220.

823 (HERLUFESH). Lens. Concave.

Not signed.

c1800 (g).

Dia32. Fitted in horn, which extends in a handle. A rivet at the tip of the handle connects to a horn cover into which the lens can be turned for protection.

824 (HERLUFESH). Kaleidoscope.

Polarizing.

Not signed.

Mid 19th century (g).

Brass. Tube Dia50 L230. Eyepiece Dia19 L32. At the end of the tube is a circular glass chamber with bits of mica. The glass is fitted in brass and may be turned. Screwed to the tube is an iron frame with a mirror 135x80 held on slant at the front of the tube. Sunlight can be directed via the mirror through the mica chips. Supported on brass pil-

lar H90 with joint to brass tube. Wooden base 320x105.

825 (HERLUFSH). Kaleidoscopes.

Two.

Not signed.

c1900 (g).

(a) Tinplate, soldered Dia35-75 L250.

(b) Ironplate, soldered Dia35-44 L162.

Ornamentation.

826 (HERLUFSH). Grating.

Diffraction.

Signed: Plate polished ??? / Ruled on

Rowland's Engine Baltimore / 1890

(or 1896?)

1890

Speculum metal plate 36x36; polished part Dia35. Grating 30x16. In boxwood case 49x49x22.

827 (HERLUFSH). Lens.

Plano-convex.

Not signed.

c1800 (g).

Dia270. Mounted in crude wooden frame with two iron pivots Dia10, obviously for supporting the lens in a stirrup. At the centre of the lens is a hole Dia4, purpose unknown.

828 (HERLUFSH). Stereoscope.

Not signed.

1856 (acquired).

Mahogany case, blackened inside. 205x105x120. Two eye pieces, one sliding to adjust for eye distance.

829 (HERLUFSH). Kaleidoscope.

Signed: Cornelius Knudsen / Kjöbenhavn

1907 (acquired).

Mahogany box base 220x160. At a slant side is an opaque window 160x65, and on an opposing slant side is the view-tube Dia64 L220 of turned ebony partly covered with gilt and gold-decorated sheet iron. Inside the box is a cylinder Dia50 L120, covered by richly coloured paper or material. This can be rotated by a crank from the outside. A wooden shutter with a circular hole and a curved end can be inserted between the cylinder and the kaleidoscope tube.

830 (HERLUFSH). Camera obscura.

Signed: CAMERA OBSCURA / Zeichen-Apparat / W&S/B

Mid 19th century (g).

Black pasteboard box 250x200x160.

The top is hinged at the long side.

When opened, the sides are closed by sector-shaped boards and an opaque draughting glass appears as top side of the box. Inside is a mirror at 45°. Under the hinge protrudes from the box side a brass ring Dia55 H25 with the objective lens.

831 (HERLUFSH). Lens. Bi-convex.

Not signed.

Dia180. Wooden frame 240x245. Focus about 1.5m

832 (HERLUFSH). Camera obscura.

Not signed.

Mid 19th century (g).

Beaker shaped turned wood, painted dark green, Dia100 H140. Foot Dia84 and baluster turned pillar. Overall H210. Inside the cup is a 45° mirror and opaque glass. At the side is an objective lens in a wooden tube Dia55 L65; push focusing.

833 (HERLUFSH). Mirror, rotating, cubic.

Not signed.

c1878 (acquired).

Boxwood construction. Base 235x150. A gallows supports the top of the mirror axle, which is rotated by a crank via an angle gear. Four mirrors 150x95.

834 (HERLUFSH). Siren. Caignard de Latour.

Signed: INSTITUT D'OPTIQUE / du Dr J.G.Hoffmann à Paris
1876 (acquired).

Brass cylinder Dia53 H29. Revolving disc with 16 holes. Silvered scale plate 95x51, scales 0-90 "Unités" and 0-50 "Centaines". Open rear reveals endless screw and cogwheel.

835 (HERLUFSH). Resonators. Helmholtz.

Not signed.

c1877 (acquired).

Set of ten hollow brass spheres. All placed on wooden base plate 660x205. All marked with the RK (Rud.König) monogram and resonating tones: UT2, UT3, SOL3, UT4, MI4, SOL4, ♯7, UT5, RE5, MI5.

836 (HERLUFSH). Organ pipe.

Not signed.

Second half 19th century (g).

Wooden tube square cross section 85x85 L1170. At one end is the tapered blow pipe and the reed; at the other a tuning end-plate. Three small shutters vary the active length of the pipe to give four different tones.

837 (HERLUFSH). Organ pipe.

Not signed.

Second half 19th century (g).

Wooden tube square cross section 60x60 L750. Open pipe. Shutter can halve the sounding length of the pipe.

838 (HERLUFSH). Tuning fork on resonance box.

Signed: MAX KOHL / CHEMNITZ
i/S / Hofmechaniker / CORNELIUS
KNUDSEN / KØBENHAVN

1908 (acquired).

Box 208x98x55. "G1 PHYSICHA-
LISCHE STIMMUNG" stamped on top
of the box.

839 (HERLUFSH). Resonance bowl.

Not signed.

First half 19th century (g).

Glass Dia225 H150, thickness of glass 5 mm. Turned mahogany base Dia160. Filled with water and stroked with a violin bow, the water is vividly agitated.

840 (HERLUFSH). Ear trumpet.

Not signed.

c1800 (g).

Sheet iron. Soldered small pieces. Outside black painted, inside red. Saxophone-shaped, bell Dia120. L580.

841 (HERLUFSH). Chladni plates.

Not signed.

19th century (g).

Set of three with common wooden handle L70. (a) 115x115, (b) Dia134, (c) Dia208.

Also sieve for sand, made of softwood, bent to a circle Dia108 H82 with coarse cloth for straining sand.

842 (HERLUFSH). Organ pipes.

Not signed.

1877 (acquired).

Set of eight. Softwood. Cross sections

from 50x48 to 31x26; the longest L350, the shortest L175. Adjustable wooden ends, skin clad, for tuning. Wooden stand 580x90

843 (HERLUFSH). Spectroscope, direct vision.

Signed: SPECTROSCOPE – HOFMANN / Construit à l'Institut d'Optique / du Dr J.G.Hofmann á Paris. c1870.

Brass and oxidized brass. Tube L450-475. Rack and pinion focusing. Eye piece with shaped cardboard shade 190x115. Prisms for straight sighting. Adjustable spring loaded slit with knurled knob. Scale tube at right angle to main tube. Standing on brass pillar Dia25. Iron tripod.

844 (HERLUFSH). Spectroscope.

Signed: HEELE BERLIN (Hans Heele. Pre 1923, when his workshop was acquired by C.J.Bamberg, forerunner of Askania-Werke AG)

c1920 (g) Prism with trapezium cross section, composed of two types of glass. Collimator and prism is fixed. The telescope is rotatable and has an index arm, vernier and magnifier, scale 0 to 48° in 10 min divisions, Vernier to 0.5 min. Clamp and tangential screw. Collimator with adjustable slit. Iron tripod, one adjustable screw foot.

845 (HERLUFSH). Spectroscope.

Not signed.

c1900 (g).

Iron tripod, baluster shaped pillar. Iron platform Dia70 for prism. Iron bracket extends to hold the collimator tube Dia46 L190. Adjustable slit. Overall H290. No prisms.

846 (HERLUFSH). Spectroscopic apparatus.

Not signed.

c1900.

A paraffine lamp is placed before a condenser lens to focus the light on a vertical slit. Hight of the lamp can be adjusted to match the slit. A shield of black painted wood has a scale 350-0-350. (This instrument was probably made by Julius Petersen (1871-1919), prominent Danish educationist, who was the school's teacher of Physics and Woodwork).

847 (HERLUFSH). Projector, film.

Not signed.

c1900 (g).

Old 36 mm apparatus for hand operation. Overall H670. Reels Dia210. Lens Dia30.

848 (HERLUFSH). Projector.

"Kinematograf".

Not signed.

c1900 (g).

With paraffine lamp. Probably a toy. Overall H350. Base 270x195. Attached sheets from an old catalogue describes "Cinematograph and Magic Lantern" by "G.C. & Co., N."

849 (HERLUFSH). Döbereiner lamp.

Not signed.

Mid 19th century (g).

Cobalt glass jar Dia90 on brass foot Dia100. From the brass lid Dia110 hangs a glass vessel open below in which can be hung a plate of zinc. The brass lid has a nozzle for Hydrogen, small brass fork for spongy Platinum and a valve. Overall H200. Invented 1823 by Johann Wolfgang Döbereiner (1780-1849).

850 (HERLUFSH). Döbereiner lamp.
Not signed.

Mid 19th century (g).

Glass jar Dia110 H190. Standing in brass sleeve on turned mahogany base Dia140. Brass lid with brass cap to open up, thereby opening the valve and exposing the platinum catalyst.

851 (HERLUFSH). Blowtorch.

Aeolus lamp.

Not signed.

First half 19th century (g).

Brass foot Dia120. Turned brass pillar Dia17-21 carrying an oil lamp of brass L130 H40. A brass pillar extending upwards holds the spirit container in adjustable distance over the lamp. Copper tube from the top of the spirit container ends in a nozzle above the oil lamp, where the spirit vapour is ignited. Spring loaded safety valve. Total H440

852 (HERLUFSH). Carbon arc lamp.

Signed: Max Kohl, Chemnitz

c1900 (g).

Iron tripod. Wooden baluster shaped pillar H240. Two arced brass arms are conductors and support the electrodes positioned in a polished parabola.

853 (HERLUFSH). Carbon arc lamp.

Not signed.

c1900 (g).

Iron foot Dia140 with a brass cylinder Dia90 H120 containing electrical mechanism (coil) operating a release lever for the clock feeding the carbon rods. Light is reflected in a polished parabola.

854 (HERLUFSH). Hydrogen lamp.

Fürstenberger's.

Not signed.

c1800 (g).

Brass sphere Dia115 on three brass feet. Connected to an open bowl above Dia85 H100 by a cock to be turned by a wing nut. A glass outlet nozzle between two electrodes allows hydrogen from the lower sphere to escape when the cock is opened. When the wing nut is operated, a lever would lift the shield of an electrophorous (missing) providing power for an electric spark. The instrument is incomplete.

Described in F.L.Ehrmann: *Déscription et Usage de quelques Lampes à Air Inflammable*, Strasbourg 1780.

855 (HERLUFSH). Hydrogen lamp.

Fürstenberger's.

Not signed.

c1800 (g).

Oak base 255x255x95 opening at one side, containing an electrophorous. Upon this a glass vessel Dia165 H175 standing in a brass collar and with a brass fitting at the top, connecting to an upper pear-shaped glass vessel Dia105 H180. A brass cock leads to a nozzle between two pointed electrodes. A lever on the cock operates the electrophorous below.

Se note, item 854.

856 (HERLUFSH). Lamp.

Magnesium burner.

Not signed.

Mid 19th century (g).

Ornamented lead loaded silvered foot 80x80. Silvered pillar Dia7 H110. A reel Dia132 consists of two brass plates between which a magnesium band is held in a roll. A clockwork in a brass house 120x70x29 feeds the magnesium through a tube to the focus of a polished parabola Dia160, where it is burnt.

857 (HERLUFSH). Thermopile.

Not signed.

c1900 (g).

Black wooden base Dia150. Turned black pillar H170. Double conical brass house maximum Dia65 minimum Dia35. Circular brass plates to close both ends. Electrical terminals.

858 (HERLUFSH). Slide rule.

Signed: DARMSTADT / No 141

c1925 (g).

Bone on mahogany. 14 scales. Metal framed window. L295 W38.

859 (HERLUFSH). Slide rule.

Not signed (maker possibly Darmstadt).

c1925 (g).

Bone (probably) on mahogany. 12 scales. Magnifying glass in window. L530.

860 (HERLUFSH). Air pump.

Not signed.

Mid 19th century (g).

Vacuum. Mahogany base 300x220. Two wooden columns Dia30-35 support wooden yoke holding the top of the cylinder and the rack for the piston. An iron crank Rad200 with pinion operates the piston. Brass cylinder Dia52 H220. Small glass vacuum meter. Ground glass plate Dia190. Glass vacuum cylinder Dia150 H240, top covered with brass plate with internal hook for suspending a bell. A brass rod Dia5 L200 passing through airtight gasket in the lid has an arm from which an iron weight is suspended. By turning the rod from the outside, the weight can be made to strike the bell.

861 (HERLUFSH). Glass vessels for vacuum experiments.

Not signed.

c1800 (g).

Three. (a) Spherical Dia74. Brass nozzle at the top, inner glass dip tube. For showing fountain in vacuum. (b) Spherical Dia91. Brass nozzle at the top. Small bladder inside. (c) Pear shape Dia85 L175. At a long neck is a brass fitting with stopcock and screw cap with hook for suspending on a scale. Demonstrates weight of air.

862 (HERLUFSH). Air pump.

Signed on the yoke: Dumotiez Frères à Paris

c1800 (g).

Pressure. Brass double barrel. Four brass feet fastened with wing screws to the table support shaped brass base plate. Two turned brass pillars H180 support the brass yoke holding the two cylinders and double rack and pinion mechanism. Urn shaped finials at the top of the pillars. Brass plate with polished glass Dia215. Glass cylinder 11 mm thick Dia190 H200 with wire net.

863 (HERLUFSH). Air pump.

Vacuum.

Signed: DOLLOND LONDON

1799 (acquired).

Mahogany base 365x260. Two brass pillars H180 with urn-shaped finials support mahogany yoke with double rack and pinion steel mechanism. Two brass cylinders Dia40 H185. Glass plate on brass Dia190. U-tube mercury manometer under glass dome. Bell jar Dia200 H360. Von Guericke's manometer under the bell jar.

864 (HERLUFSH). Discharge tube.

Not signed.

c1800 (g).

Glass Dia50 L1140 incl brass fittings at ends. At the top a domed brass cap with pointed brass rod inside. The bottom has threads and stopcock for connection to air pump. Inside is a brass sphere Dia~25.

865 (HERLUFSH).

Guinea and feather experiment.

Not signed.

c1800 (g).

Glass Dia21 L1000, brass fitting at the top, threads for connection to vacuum pump at the bottom.

866 (HERLUFSH). Magdeburg hemispheres.

Not signed.

Early 19th century (g).

Brass, red lacquered inside. Dia120. Heavy ring handles on both parts. Supported by the stopcock connection on a brass stand.

867 (HERLUFSH). Magdeburg hemispheres, flat.

Signed: Carl Hering Auerbach i/V

c1900 (g).

Cast iron. Dia300. Heavy iron handles. H~50 excluding the handles. Brass stopcock.

868 (HERLUFSH). Discharge tube.

"Electric egg".

Not signed.

c1800 (g).

Glass Dia200 H340. At the top a brass fitting with gasket for conducting rod Dia10 with brass sphere inside the tube. Lower conductor from base fitting with

stopcock. Screw-fit brass foot Dia105. The cock handle has a hole and set screw for electric connection.

869 (HERLUFSH).

Guinea and feather experiment.

Not signed.

c1800 (g).

Glass tube bottom Dia130 top Dia90. Glass 5 mm thick. At the top a 3.5 mm thick brass plate Dia90, with two brass drop plates to be released from outside by turning a handle.

870 (HERLUFSH).

Bell jar for mercury rain.

Not signed.

c1800 (g).

Glass sphere with opening Dia110 at the bottom. Ground rim for placing on vacuum pump table. At the top a brass plate Dia 85 having a wooden cup, with the bottom protruding down into the sphere. Mercury can be sucked through the pores in the wood, creating "rain" in the evacuated sphere.

871 (HERLUFSH). Electrophorous.

Not signed.

c1800 (g).

Resin cake Dia310 in sheet iron tray H20. Brass disc Dia230 with glass handle L250.

872 (HERLUFSH). Faraday cage.

Not signed.

Late 19th century (g).

Dia315 H340. Top is sheet iron, painted black with golden ring and with brass handle. Cylindric side is iron net.

873 (HERLUFSH). Discharge tube.

Not signed.

c1840 (g).

Glass tube Dia45 L130. Brass sleeve on top has electric connection, gasket for conducting rod and threaded hole for connection to vacuum. Bottom brass sleeve has electric terminal on the stem. Ornamental cast iron foot with pillar H125.

874 (HERLUFSH). Dischargers, jointed. Two.
Not signed.
c1800 (g).

(a) Two glass handles with brass fitting sleeves in which two curved brass conductors L300 slide, to be held in position by set screws. The conductors are hinged together and ending in brass spheres Dia27. (b) One glass handle connected to the joint of two curved brass conductors L220 with brass spheres Dia28.

875 (HERLUFSH). Butterfly net, Faraday's.
Not signed.
Mid 19th century (g).
Cast iron ornamental base Dia95. Glass stem insulator Dia9 H250. Vertical brass ring Dia110 with net of flax. Small pith balls. Overall H400.

876 (HERLUFSH). Electroscope.
Not signed.
Mid 19th century (g).
Bell jar Dia145 H170 has at the top a brass cap with a small brass sphere connected to the inside of the jar. The jar is placed on a turned mahogany base with a groove matching the rim of the jar.

877 (HERLUFSH). Aurora flask.
Not signed.
c1800 (g).

Pear shaped glass flask H300 maximum Dia100. At the neck is a brass stopper with a pointed brass rod inside and a brass sphere Dia36 outside. The lower 70 mm of the bottle is covered with a damaged substance (oxidized tinfoil?).

878 (HERLUFSH). Discharger, electric. Henley's universal.
Not signed.
Late 18th century (g).

Oak base 445x90. two glass pillars H200 on turned wooden bases carry knee joints with sleeves, in which the discharging rods L230 that can slide. The rods end in brass spheres Dia17 at one end and a pair of tweezers as terminals at the other. Between the pillars is a table Dia90 on expandable turned baluster shaped pillar.

879 (HERLUFSH).
Friction electricity demonstration.
Not signed.
Late 18th century (g).
Two pieces of wood lined with fur so as to open up like a book. A reel with a strip of red waxed cloth (?) 88x780 which can be pulled through the closed "book", generating static electricity. A hand-holding Leyden jar Dia35 H110 has a conductor bent so that the ribbon can pass through it, thus charging the Leyden jar. Wooden box with sliding lid 190x124x77. Hand written label "Electriceer Apparat".

880 (HERLUFSH).
Electrostatic chimes.
Not signed.
c1800 (acquired 1801).
Oval wooden base 330x185 with two glass insulating pillars Dia18 H400.

Wooden caps at the top are connected by glass rod from the middle of which is suspended a wooden sphere Dia40 holding four brass rods in a cross. Five brass bells Dia60 are hung from this with four small weights between them.

881 (HERLUFSH). Electric xylophone. Not signed.

c1800 (g).

18 glass plates W25 suspended vertically in a wooden resonance box. In front of this is a horizontal wooden cylinder Dia50 L420 with tinfoil opposite the glass plates. Between them are pithballs suspended from a resin rod. Adjustable distance between the glass plates and the cylinder. The whole is mounted in a wooden frame in the shape of a lyre, finials at the tops. Overall L~500 H~400.

882 (HERLUFSH). Thunder house.

Signed: C WEITZMANN / FREDE-RIKSBERG

c1880 (g).

Shaped mahogany base plate 375x170. Leyden jar Dia120 H290. On a circular iron plate Dia140 are three brass pillars carrying a hemispherical hood representing a roof. The "lightning conductor" is a pointed brass rod. Inside the Leyden jar is a brass pillar H650 ending in a point, supporting a pivoting brass rod L450 with a lump of cotton wool representing a cloud, and a brass sphere as counterweight. Under the "house" is a tray for spirit to be ignited if struck by electric spark. Overall H680.

883 (HERLUFSH). Thunder house.

Signed: Cornelius Knudsen / Kjöbenhavn

c1880 (g).

Wooden base 210x150. Four brass pillars support a roof with a brass sphere connected to a wooden tray for placing spirit-wetted cotton wool. The "lightning conductor" is a brass band extending from the brass sphere to the ground. Overall H350.

884 (HERLUFSH).

Electrostatic see-saw.

Not signed.

c1800 (g).

Ebonized base plate 635x145. Two Leyden jars Dia115 H160. Brass spheres Dia39 on top. In the middle is a brass pillar H250 carrying a copper gallows with fulcrum for the see-saw. This is a glass rod Dia15 L552 with brass collars at the ends and two figures. From the centre pillar two bent iron rods extend to touch the heads of the figures. Overall L552 H600.

885 (HERLUFSH).

Electrostatic see-saw.

Not signed.

c1800 (g).

Wooden base 625x155. Two Leyden jars, one (at least) not original. Brass spheres at the tops. In the middle a brass pillar H235 supporting copper gallows with holes for fulcrum for the glass rod see-saw L240 with two figures, obviously a woman and a man. Two curved iron rods extend from the gallows to touch the heads of the figures. Overall H510.

886 (HERLUFSH).

Electrostatic see-saw.

Not signed.

Mid 19th century (g).

Ebonized base 230x90 on four baluster

shaped ivory feet Dia~5 H26. Two glass rods Dia6 with ivory turned fittings support the see-saw which seems to be made of wood. No figures. No Leyden jars.

887 (HERLUFSH).

Electrostatic generator.

Not signed.

Late 19th century (g).

Induction. Wooden oval base 630x400 with expanding bracket for drive wheel. One fixed glassplate Dia470. One rotating Dia410. Vertical comb conductor. Glass insulator pillars Dia30 H250. Horizontal comb conductor connects to two glass cylinders Dia40 H220, supposedly Leyden jars, but no metal cover of the glass. Drive wheel Dia 150; driven axle Dia43.

888 (HERLUFSH). Wave apparatus, Two.

Not signed.

Mid to late 19th century (g).

(a) Cast iron oval basin, 160x110 D5. Iron upright H370 with height adjustable brass bracket for supporting spiral spring. (b) Wood (boxwood?) 275x180 with oval basin 210x150. Wooden upright 15x15 H270 for supporting a spring. Mercury used as fluid for waves give short waves, easy to reflect. Boxwood vial for mercury.

889 (HERLUFSH). Calculator.

Not signed.

Mid 19th century (g).

Wooden box containing tables of multipla. Along the edge of an opening in the box are numerals 1 to 50. Over the row of numerals appearing in the opening is the factor which, when

multiplied with the number on the edge gives a product, read on the table through the opening.

890 (HERLUFSH). Electroscope.

Not signed.

Mid to late 19th century (g).

Small, brass and glass. Flask, Dia33 H70, containing two minute pith balls hung in silk cords. Brass cap with bent brass wire and small brass sphere. Brass base Dia40 with threads for a domed brass cover Dia38 H120.

891 (HERLUFSH). Electrometer. Henley's.

Not signed.

Mid to late 19th century (g).

Ebony base Dia50 and pillar Dia9 H180 ending in ebony sphere Dia25. On the pillar under the sphere is a semicircle with ivory scale 0-180 (0-85 broken off) Rad38. From the centre hangs an ivory stick L85 with pithball.

892 (HERLUFSH).

Electrometer. Henley's.

Not signed.

c1900 (g).

Wooden turned base Dia72. Wooden pillar Dia11 H150 ending in wooden sphere Dia22. On the pillar under the sphere is a wooden semicircle Rad28 with a brass bearing at the centre and a resin (?) pointer indexing on a scale 0-180 drawn on the wood.

893 (HERLUFSH). Volta pistol.

Not signed.

c1800 (g).

Hydrogen gun. Brass barrel Dia40 L~140. Wooden gun carriage on two wheels. Overall L210

894 (HERLUFSH). Electrometer.
Coulomb's torsion balance.

Not signed.

c1800 (g).

Black wooden base Dia175 with three adjustable wooden feet. Glass cylinder Dia165 H120. Glass lid Dia172 with cylindrical extension Dia23 H100. Torsion fibre hung from ivory knob with ivory pointer indexing on circular ivory scale 0-60. Paper scale glued to the glass cylinder seems to be 0-300, but difficult to read.

895 (HERLUFSH).

Electrostatic Earth-Moon system.

Not signed.

c1800 (g).

Turned mahogany base Dia68 H53. Pointed brass pillar H130. Shaped brass wire carrying two ivory spheres Dia17 and Dia12 rotates on the pillar with radii 29 and 46. The larger sphere has engraved lines for equator and ecliptic, the smaller has lit and shadowed sides. A brass point horizontal and perpendicular to the arm makes it rotate by discharge recoil when charged with electricity.

896 (HERLUFSH). Electrometer.

Grimsehl type.

Signed: Max Kohl A.G. Chemnitz

c1890 (g).

For projection. Brass house 160x70x55. Windows at two sides. One fixed plate and one adjustable from the outside. Aluminium leaves, presumably. White metal base. Level screw. Overall H220.

897 (HERLUFSH). Discharge tube.

Not signed.

c1900 (g).

Cathode ray tube with maltese cross. Overall L280. Max Dia110. Turned fruitwood base Dia130.

898 (HERLUFSH). Discharge tube.

Not signed.

c1900 (g).

Vertical cathode ray tube. Glass. Dia65 H300. Turned wooden base Dia120. Overall H460.

899 (HERLUFSH). Discharge tube.

Not signed

c1900 (g)

Vertical cathode ray. Bulb Dia 75 H270, containing metal butterfly. Turned wooden base Dia88. Overall H350.

900 (HERLUFSH 807). Volta pistol.

Not signed.

Late 19th century (g).

Hydrogen gun. Turned brass barrel Dia57-40 L330. Bore Dia22. Conductor on barrel gone, but bakelite insulator there. Carriage wood painted green and black L450. Wheels Dia180. Overall L590.

Acquired 1925 from Weitzmann in Hillerød, who sold part of his collection, which was put together during app 40 years, from (a) auction over King Christian VIII's instruments, (b) Countess Rabens estate, (c) Odense grammar school, (d) a Hamburg scientist and collector and, (e) occasional purchase. (Inf).

901 (HERLUFSH). Volta pistol.

Not signed.

1807 (acquired).

Made of thick, green glass. Dia66 L110. Pear shaped, ending in spout internal

Dial2. At the opposite end is a brass cap connected to internal electrode. A glass tube sealed to the brass contains the other electrode. Electrodes are visible through the glass – the explosion will be too.

902 (HERLUFSH). Volta pistol.

Not signed.

Mid to late 19th century (g).

Hydrogen gun. Brass barrel Dia20-13 L185. Brass carriage. Brass wheels Dia85. Mahogany base 305x150.

903 (HERLUFSH). Volta pistol.

Not signed.

1856 (acquired).

Hydrogen gun. Pewter barrel Dia45-34 L235. Wooden gun carriage. Wooden wheels Dia160 painted green and black. Brass conductor repaired, probably not original.

904 (HERLUFSH). ???.

Not signed.

Two Lignum vitae frames 145x75 joined by two brass bolts with wing nuts. Both frames have a 30x30 opening (hole) at the middle, when joined forming one through-hole. In the rear frame is in the hole a brass sphere Dia20, supported on a short brass rod. The rear frame is also extended upwards, ending in a brass ring, obviously for suspension.

905 (HERLUFSH). Discharge tube.

Not signed.

c1900 (g).

Pear shaped glass bulb Dia80 L140. Contains flakes of light, white, ceramic phosphorescent material. Wooden foot Dia85.

906 (HERLUFSH). Discharge tube.

Not signed (probably Max Kohl).

c1900 (g).

Upright pattern. To show the heating effect of cathode rays. Glass bulb Dia100 H200. Concave cathode with platinum plate ~10x15 at the focus. This will be brought to white heat when hit by the rays. Wooden base turned Dia100.

907 (HERLUFSH).

Electrostatic generator. Wimshurst.

Not signed (probably Max Kohl).

c1900 (g)

Cast iron open base 260x180. Two counter-rotating glass plates Dia210. Two Leyden jars Dia45 L135.

908 (HERLUFSH).

Spark gap with candle.

Not signed.

c1800 (g).

Ivory turned candle stick, Dia20 L65 on ebonized baluster turned pillar H100 and base Dia130. Two glass twisted arms Dia20 curve from under the candle stick to each side supporting two conductors with copper spheres Dia18 forming a spark gap at the place of the candle wick. Overall H240 W220.

909 (HERLUFSH). ???

Not signed.

Wooden pillar Dia10 L300; at the top a wooden sphere Dia54. Upon this is placed a brass stirrup H55 opening 45 mm. The stirrup holds two parallel brass rods L470 connected at each end by brass arcs H60. Distance between the rods is 35 mm. They are hinged in the middle to the stirrup, to form a see-saw. A loose wooden bushing Dia55 H65

can be fixed to any position of the pillar by wooden set screw. The use is not known.

910 (HERLUFSH).

Electrostatic generator. Wimshurst.

Signed in base plate: 10497

c1920 (g).

Black wooden base 430x220. Two counter-rotating glass plates Dia310. Two Leyden jars Dia40 H210; foil H100. Handle for changing polarity.

911 (HERLUFSH). Lightning panel.

Not signed. Said to have belonged to C.G.Kratzenstein (1723-95), professor at Copenhagen University.

Mid to late 17th century (g).

Glass 270x260 in wooden frame. Ebonized expandable stand, wooden set screw with spherical knob Dia25. Base Dia138. The glass plate is painted, illustrating a castle and a thunder cloud; lightning striking from the cloud. Overall H560.

912 (HERLUFSH). Leyden jars. Four.

Not signed.

Early 19th century (g).

(a) Bottle shaped, for hand holding. Dia59 H150. Black with red top. Curved conductor ending in sphere. (b) Cylindric glass Dia110 H230. Foil H180. Central brass conductor ending in sphere. (c) Bottle shaped. Dia140 H295. Foil H185. Turned wooden lid with brass conductor. (d) Cylindric glass Dia115 H330. Foil H245. Wooden lid. Conductor with brass sphere.

913 (HERLUFSH). Lightning panel.

Not signed.

Mid 19th century (g).

Wooden frame 370x130 with glass panel with row of tinfoil bits. Terminal at one end is a brass ring, at the other end a brass sphere. Glass pillar insulating stand Dia20 H220. Turned wooden base Dia125.

914 (HERLUFSH). Lightning panel.

Not signed.

Mid 19th century (g).

Wooden frame 280x175 with glass panel with row of tinfoil bits forming a star. Turned wooden base Dia135 with pillar H80 holding the frame with wooden set screw.

915 (HERLUFSH).

Lightning panel, glass sphere.

Not signed.

c1800 (g).

Spiral of tinfoil bits on the glass sphere Dia175. Brass sphere as terminal at the top. Brass pillar Dia20. Brass base Dia130. Overall H450.

916 (HERLUFSH). Aurora flask.

Not signed.

c1800 (g).

Pear shaped glass Dia100 H250. At the top is a brass collar with a pointed horizontal brass rod L50. In the flask a pointed brass rod extends from the top downwards approximately to the centre of the flask. The lower rounded part of the flask is covered with tinfoil H50. The flask is standing in a brass bowl Dia80. From this a pointed brass rod L115 extends horizontally. Glass pillar insulator Dia26 H280. Turned wooden base Dia175.

917. (HERLUFSH). Leyden jars. Two.

Not signed.

Early 19th century (g).

Hand holding. (a) Bottle shape Dia52 H140. Cork stopper with curved brass conductor ending in sphere. Gold foil fill. (b) Bottle shape Dia31 H92. Cork stopper with brass conductor ending in sphere. Black granulated fill.

918 (HERLUFSH). Conductors.

Three.

Not signed.

Early to mid 19th century (g).

(a) Glass stand on turned wooden base with brass point at the top. A horizontal brass rod L370 with two insulated pewter spheres Dia70 balance on the point and will rotate by electrical attraction or repulsion. Overall H490. (b) Brass stand on turned wooden base Dia100. Boxwood fitting with horizontal glass rod Dia12 L130 extending to one side can be fixed at any elevation on the stand by wooden set screw. On the end of this a brass rod Dia12 L180 probably for supporting silk threads or pith balls. (c) Iron tripod with glass pillar Dia15 H240. At the top is a brass beaker Dia110 H90 (oval shape). Demonstration of charge collecting on the outside of a conductor.

919 (HERLUFSH). Capacitor. Air.

Variable.

Not signed.

Early 19th century (g).

Mahogany base 315x105 with dove-tail guide. Two circular brass plates Dia110 on glass rod insulators H140 on mahogany slides move in the guide. Pith ball charge indicators on the plates. Glass stand between the plates supports dielectric plate. Overall H340.

920 (HERLUFSH). Discharger.

Signed: C. Weitzmann's Etbl / Hillerød Kbhvn

c1900 (g).

Mahogany base 160x90. Two insulating pillars (ebonite?) Dia10 H100 with horizontal sliding brass rods with small brass spheres provide a variable spark gap.

921 (HERLUFSH). Microphone.

Not signed.

c1878 (acquired).

Boxwood. Turned base Dia160. Baluster shaped pillar H200 with knee joint to microphone house Dia95, all boxwood. Opening to membrane Dia20. Carbon powder system. Brass terminals.

922 (HERLUFSH). Morse receiver.

Signed: St.N.T.Ss FABRIK / KJØBENHAVN / No 38999

Made by: Store Nordiske Telegrafsekskab, Copenhagen.

c1920 (g).

Mahogany base 350x190 on four turned feet. Spring wound clock contained in brass housing 170x70x110 upper side slides off as lid. Two receiving coils. Start-stop lever.

923 (HERLUFSH). Phonograph, electromagnetic.

"Valdemar Poulsen Telegrafon".

Signed: AKTIESELSKABET / DANSK TELEGRAFONFABRIK / KJØBENHAVN / No 43 (brass label)

c1900 (g).

Mahogany case 365x210x225. Brass fittings and terminals. Electromotor driven. Disc Dia130. Recorder head moves along a worm gear. One microphone, two ear phones.

Electromagnetic recording on a string of steel was performed by Valdemar Poulsen in 1898. He called the instrument 'Telegrafon'. This is an early example of the instrument.

924 (HERLUFSH). Telegraph.

Pneumatic.

Not signed.

Late 19th century (g).

Two stations. Wooden base plates 310x140. Brass crank on brass pillar H100 operates piston on a membrane (missing) closing the pneumatic system. Lowering the piston increases the pressure and moves an index pointer forward one step on both transmitter and receiver. Pointers indicate on dial Dia120 with 24 letters.

925 (HERLUFSH). Generator, electromagnetic.

Signed on copper plate in the lid: Julius Nissen / KJØBENHAVN / Etablissement for physiske Instrumenter c1860 (g).

Two coils being rotated at the poles of a U-shaped permanent magnet. Similar to Clarke's machine, except here the coils are facing the ends of the magnets. The magnet L150 W75 consists of five stacked flat magnets. Mahogany box 275x125x150.

926 (HERLUFSH). Generator, electromagnetic.

Not signed (probably English).

c1860 (g).

Two coils Dia40 L43, covered with blue velvet, being rotated at the side of a U-shaped permanent magnet L200. Brass gear mechanism, crank at the side of integral mahogany box 250x115x110.

Lock with key. Paper label in the lid with instructions for medical use. ("NEWLY INVENTED IMPROVED MAGNETO-ELECTRIC MACHINE. FOR NERVOUS DISEASES.."). Conducting cords and handles missing.

927 (HERLUFSH). Electric motor.

Signed on brass plaque in the base:

L'ÉLECTRICITÉ / ATELIERS DE CONSTRUCTION MECANIQUE / G MECANIQUE ELECTRIQUE 82 / MACHINES MAGNETO-ELECTRIQUES / A.DE MERITEN / 44 RUE BOURSAULT PARIS

c1900 (g).

Mahogany base 255x235. Four coils on stator magnets. Rotor with 18 coils. Commutator with two brushes. Pulley for belt drive Dia50 L33. Overall H280 W250. Axle with bearing L350.

928 (HERLUFSH). Generator, electromagnetic.

Signed on plaque in the base:

P.OTZEN & THORSTENSON / ELEKTROMEKANISK ETABL. / KJØBENHAVN

c1900 (fl 1876-1924).

Crank operated drive wheel Dia295 with belt drive to small rotor between two vertical electromagnets. Overall H450. Oak base 310x250.

929 (HERLUFSH).

Induction apparatus.

Signed on ivory plaque: A. Rasmussen / Kjøbenhavn / No 251

c1900 (g).

Integral wooden case 175x130x140 with coil Dia55 L110. Iron hammer L40 with brass movement adjustment. Two primary brass terminals. Six brass

terminals marked: 'K', 'Z', '2', '2', '1', '1'. Mahogany drawer for accessories (none there). Lock with key.

930 (HERLUFSH). Electric motor.

Not signed.

c1900 (g).

Wooden base 315x270. Iron yoke 220x-60x125. Two coils Dia80 L46. White metal switch, four contacts. Rotor Dia80. Commutator with two coal brushes.

931 (HERLUFSH). Coil with tuning fork as interrupter.

Signed: Max Kohl A.G. Chemnitz

c1900 (g).

Cast iron base 180x120x20. The coil Dia30 L90 is between the legs of the tuning fork and with the axis parallel to the legs. Four terminals are marked: 'P', '3,96 ohm', 'P S', '7 ohm S'. 6 volt.

932 (HERLUFSH). Electric motor. Model.

Signed: Max Kohl / Werkstätten für Präzisionsmechanik / CHEMNITZ i.S. (catalogue no. 95 488)

Cornelius Knudsen / Kjöbenhavn. (brass plaques)

c1920

Educational. AC stator, 3-phase, six coils. Three interchangeable rotors. Wooden base.

Ref: Kohl III, p 999.

933 (HERLUFSH). Electromotor with two water pumps. Model.

Not signed.

Mid to late 19th century (g).

Wooden base 500x290. Two coils Dia55 H70 side by side. Over and under are two star-shaped rotors Dia145 with six

spokes on same axle between the coils.

Two terminals. Eccentric operates two levers to the pumps. The pumps are glass cylinders Dia40 H140 with brass pistons and spouts. Sheet iron basin. Overall H210.

934 (HERLUFSH). Electromotor with water pump. Model.

Not signed (probably Danish).

c1900 (g).

Wooden base 210x122. One horizontal coil with two rocking arms, one at each end of the coil making electrical contacts, and also rocking bar magnets past the ends of the alternately magnetized coil. Brass flywheel Dia97 with bearings on two A-frames H100. Eccentric to brass piston in glass cylinder with spout. Two DC terminals.

935 (HERLUFSH). Induction coil. Ruhmkorff.

Signed: Cornelius Knudsen / Hof Instrumentmager Kjöbenhavn.

c1920 (g).

Wooden base 375x200x55. Two ebonized end plates 115x115 with secondary brass terminals on the top and the coils Dia120 L119 between, covered with black bakelite or ebonite. Two brass uprights Dia14 H75 hold the interrupter, which is a steel spring hammer L75. Main switch is a cylinder with brass and insulating sections.

936 (HERLUFSH). Compass, electromagnetic.

Signed on the base: C. Weitzmann

c1900 (g).

Brass base Dia120 on three level screws and with two terminals. Pillar Dia19 H210 with two wires leading to concen-

tric mercury rings in ebonite cap at the top. A wooden bar L240 with two coils Dia55 L90 balances on a steel point at the top of the pillar. Points dipping in the mercury are electric contacts to the coils.

937 (HERLUFSSH). Ampere apparatus. Not signed (probably Danish) c1900 (g).

(a) Frame aerial 230x260 on boxwood pillar and base H420; (b) solenoid Dia40 L200, 30 turns, on boxwood pillar and base H380; (c) rotating conductor, ends bent down and dipping in circular channels of mercury. Boxwood Dia230 H120.

938 (HERLUFSSH). Reversing key.

Not signed (probably Danish)

Late 19th century (g).

Mahogany base 210x125. Four terminals. Ivory cylinder partly covered by brass wire. Four contact arms are alternately connected when the cylinder is turned.

939 (HERLUFSSH). Morse key.

Not signed (probably Danish)

1911 (acquired).

Wooden base 130x70. Brass arm L75. Ebonized knob. Two terminals.

940 (HERLUFSSH 398).

Rotating conductor.

Not signed (probably Danish).

1892 (acquired).

Triangular mahogany base 155x155x155 with three level screws. From a terminal at the base, current is lead to a circular ebonite disc Dia50 with two circular grooves for mercury half way up a permanent bar magnet H300. A copper wire shaped as reversed U, rotates

around a point at the top of the magnet with the two arms dipping into the mercury rings. When current is passed through the wire, the field from the magnet will make it rotate.

941 (HERLUFSSH 290).

Jumping spiral. Roget's.

Not signed (probably Danish).

1877 (acquired).

A solenoid Dia28 L100, 30 turns is suspended at one end from a gallows H150. The lower end dips into a cup Dia38 of porcelain. Mahogany base 140x130.

942 (HERLUFSSH 451).

Barlow's wheel.

Not signed (probably Danish)

1897 (acquired).

Mahogany base 200x80. U-shaped magnet. Toothed brass wheel with brass fittings. Two terminals.

943 (HERLUFSSH). Magnetic field surrounding a conductor.

Signed on brass plaque: STRUERS

c1920 (g).

Demonstration by sprinkled iron filings. Wooden frame 130x130. Four ebonite pillars H50 carry a celluloid transparent plate 100x100 with a vertical copper wire through the middle. Castor for iron filings. Two terminals.

944 (HERLUFSSH 710). Wheatstones telephone bridge.

Signed: Hartmann & Braun A-G /

Frankfurt a.M. / No 3123

Cornelius Knudsen / Kgl. Hof Instrumentmager / København

1920 (acquired).

Mahogany base 330x170. Resistance

wire L245 with white lacquered paper scale 0-50 non-linear. Terminals for external resistors, battery, telephone or galvanometer. A Ruhmkorff's coil Dia30 L55 is included.

945 (HERLUFESH 481). Relay.

Not signed (probably Danish)

1899 (acquired).

Single pole double break contacts. For low-voltage operation of local circuits. Mahogany base 170x160 with mahogany cover and glass panel. Two horizontal coils on iron base. Iron contact arm. Two brass contacts, screw adjustment.

946 (HERLUFESH 641). Relay.

Signed: Cornelius Knudsen / Hof

Instrumentmager / Köbenhavn

1912 (acquired).

Horizontal U-shape magnet with coil Dia19 L36 (150 ohm) between the legs. Wooden base 137x125 with mahogany cover.

947 (HERLUFESH). Galvanoscope.

Sine, incomplete?

Signed: WEITZMANN

Late 19th century (g).

Wooden base 160x160. Turned pillar H64 with vertical grooved brass ring Dia150. In the groove is an insulated wire ending in two terminals. At the centre is a compass needle on a pointed brass pillar. No scales. Overall H232.

948 (HERLUFESH). Magnetic field apparatus.

Signed: STRUERS

c1930 (g).

Two vertical coils Dia64 L140 with soft iron cores and horizontal pole pieces create a strong magnetic field. Attach-

ments (a) balance for Laplace's law; (b) swing with copper plate and toothed copper plate to demonstrate eddy currents; (c) copper plate Dia315 to be rotated in the field to demonstrate braking power due to eddy currents; (d) magnetic balance for experiments on magnetic field; (e) models of armature to be rotated in the magnetic field as demonstration of motor.

949 (HERLUFESH). Relay.

Not signed.

c1910 (g).

Two coils Dia30 H55. Brass bracket. Two brass contact screws. Four brass terminals. Relay arm pivots on top of a small brass pillar H70. Wooden base 210x145.

Marked on one set of contacts: "L 2 E", on the other: "R 1 E".

950 (HERLUFESH). Millivolt and amperemeter.

Signed: Nadir / Fabrik für elkt Mess-Instrumente / Kadelbach & Randhagen / Berlin-Rixdorf / Type A No 256. Cornelius Knudsen / Copenhagen. c1920 (g).

Mahogany case 180x160x90. Half of one side opens to reveal the scale 0-150 and marked "75 Millivolt 3 Ohm / Liegend geeicht".

Accessories: Four resistances, (a) "Vorschalt-Widerstand für Millivoltmeter / 75 Millivolt 3 Ohm"; (b) same; (c) "Nebenschluss-Widerstand / 3 Amperes / für Millivoltmeter 75 Millivolt 3 Ohm"; (d) same, but: 15 Ampère.

951 (HERLUFESH). Resistance box.

Signed: Reostat med Modstande fra 0,01 til 6,1 Ohm

Probably locally made.

c1900 (g)

Mahogany box 235x210x90. 12 brass blocks with plugs. Bottom of box slides open to reveal crudely arranged resistances.

952 (HERLUFSH).

Wheatstone's bridge.

Signed on brass label: Cornelius Knudsen / Kjöbenhavn

1908 (acquired).

Mahogany base 600x120. Brass bar Dia7 with sliding contact to resistance wire on millimetre scale, 0 to 500 mm. Brass terminals.

953 (HERLUFSH).

Electric assembly kit.

Not signed.

c1900 (g).

Box 490x95x60 with sliding lid. Contains magnets, coils, wires, contact key, Oersted demonstration compass, etc. Probably made in the school's own laboratory.

954 (HERLUFSH). Galvanometer.

Sine.

Signed: Sohlberg fec Hafniæ

Mid 19th century (g).

Brass circle Dia390. At the centre, supported on a wooden frame is a compass Dial30, silvered scale 0 to 360° in 0.5° divisions. The wooden support is mounted in brass fitting and rotates on circular brass base with scale Dia180 and divided 0 to 360° in 0.25° divisions. Three levelling brass screws.

955 (HERLUFSH). Resistance,

variable.

Not signed.

Mid 19th century (g).

Mahogany base 170x150. On four porcelain pillars H35 is mounted a marble slate 145x130. Contact arm moves over ten contact points, 0.2 to 2.5 ohms. The resistances are fastened to porcelain insulators below the slate.

956 (HERLUFSH). Voltmeter.

Signed: HARTMANN & BRAUN A-G
FRANKFURT A/M

c1900 (g).

Wooden case 195x185x100 with white scale behind glass. Scales 0-6 and 0-60 volts. Scale marked "60 VOLT:8370 OHM. No 146412. D.R.PATENT". Brass carrying handle.

957 (HERLUFSH). Milliammeter.

Not signed by original maker.

c1900 (g).

Wooden base 145x60. Gilt instrument case 145x130x50. Circular glazed opening for eccentric scale -50-0-50 milliampères. On the back of the scale is written: "Udsend 15-50 MA / Modtag 10-25 MA / 2,5 Ohm / Ommonteret 1906 hos / Gans & Goldschmidt / Berlin N 65."

958 (HERLUFSH). Declination

compass.

Signed on brass base: WEITZMANN

c1900 (g).

Electric. Circular brass base with three levelling feet and pillar with steel point and mercury groove at the top. The compass "needle" is a 2 meter long light brass beam with ends of electric contact needles dipping in circular grooves in wooden plates. Current passing through the beams will position this at right angle to the geomagnetic field.

959 (HERLUFSH). Electrostatic kit.
Made by C.Weitzmann, Hillerød.
c1900 (g).

Box red cardboard 490x360x80 containing insulating stands, electrometers, electrostatic bells, mill, geissler tube, lightning panel, Faraday's butterfly net etc. about 20 items.

Ref: Weitzmann, p 30-32.

960 (HERLUFSH). Milliammeter.
Galvanometer.

Signed: EGR / 18491 (probably
E.G.Rasmussen)

c1900 (g).

Black painted brass case Dia110 H65.
White scale 50-0-50. Three ranges 5-50-500.

961 (HERLUFSH). Galvanometer.

Signed: HARTMANN & BRAUN,
FRANKFURT A/M

c1900 (g).

Brass case Dia130 H75. Scale with mirror 100-0-100, marked "142 U Ca 62 OHM". Wooden base 140x140.

962 (HERLUFSH). Millivoltmeter.

Signed on white plate: WESTON
INSTRUMENT Co / BERLIN / No
1633

c1900 (g).

Mahogany case 175x160x80. Scale 0-150.

Marked "liegend geeicht WESTON
MILLIVOLTMETER No 1633 C. Knudsen Kjöbenhavn".

963 (HERLUFSH). Thermoelement.
Noe's.

Signed: G.BEBICEK PRAG.

1885 (acquired).

20 copper rolls arranged in a circle Dia185 H150. The rolls are shaped each to hold a test tube. They are connected in series by metal strips to form a thermopile. Metals in the "Noe's thermoelement" are copper and an alloy of bismuth and antimony. The test tubes are to contain ice water and the metal strips are extended over the centre of the circle, and may be heated by a central spirit flame (cold and hot junctions).

964 (HERLUFSH). Ammeter.

Hot-wire.

Signed: Max Kohl A-G / Chemnitz
Corn Knudsen / Köbenhavn

c1910 (g).

Wooden base 330x140 with upright wooden case 300x150x45 with glass front panel. A metal cord L210 is suspended horizontally, and a thin wire is hooked from the middle of this to a small eccentric on same axle as a pointer L100. Two scales 0-90 and 0-1 (in 0.1 divisions). Extra wires are kept as accessories; one, two or more wires in parallel giving different ranges of the instrument.

965 (HERLUFSH). Voltmeter.

Démonstration.

Signed: Hartmann & Braun / Frankfurt a/M

c1900 (g).

Mahogany base 280x180. Upright wooden plate 305x250. A vertical coil Dia50 H70 placed centrally on the base has a spring-suspended soft iron cylinder dipping into it. Current through the coil attracts the cylinder, the movement of which moves an angled lever and a pointer L150. Scale 0-3 and 0-30.

The scale is marked "Gesamtwiderstand = 94,1 ohm / Spule = 9,41 ohm / No 43046 D.R.G.M."

966 (HERLUFSH). Galvanometer.
Moving coil.

Signed: SIEMENS & HALSKE / BERLIN / No 2408

1886 (attached certificate).

Wooden base 205x180. Wooden upright 230x130 supporting coil of heavy wire (Dia4). Around this is a moving copper wire coil suspended in spring and dipping in mercury. At the top is a circular scale 0-360 with a knurled knob connected to a spring, balancing the moving coil and for zero adjustment. Terminals: No 1 to one end of moving coil; no 2 to one end of inner coil; no 3 to other end of inner coil, no 4 to mercury cup. Plumb bob.

967 (HERLUFSH). Polarization.

Not signed.

c1820 (g).

Set of transparent objects mounted in circular boxwood frames, ten with Dia61 and eight with Dia53. For use with polarization instrument.

968 (HERLUFSH). Galvanometer.

Demonstration.

Not signed.

c1900 (g).

Reflecting. Moving coil. Black brass frame, oval 80x200. Glass panel at front. U-shaped magnet H130 with suspended moving coil. Circular mirror. Iron tripod with one long leg holding upright with arced scale 60-0-60.

969 (HERLUFSH). X-ray tube.

Signed, etched in the glass: Ets GAIFFE-GALLOT ET PILON / 25 RUE CASMIR PERIER PARIS 7 A / AMPOULE COOLIDGE STANDARD / LICENSE EXCLUSIVE POUR LA FRANCE / Ets GAIFFE-GALLOT & PILON / Ste Ar

c1900 (g)

Spherical glass Dia170 with opposite extensions 200 and 160. No anti-cathode. Terminals: one with bulb threads and one metal cap with ring for wire.

970 (HERLUFSH). X-ray tube.

Signed, etched in the glass: A.E.G.

D.R.P.A. No 1752

End 19th century.

Glass sphere Dia75 with two opposite extensions Dia27 L85. Two concave electrodes. Platinum, angled central plate. Turned ebonized base Dia74. Overall H210. Label with instructions in German. Allegedly the oldest X-ray tube in Denmark.

971 (HERLUFSH). X-ray tube.

Signed, etched in the glass, with balance surrounded by "G" and "3720 D.R.P. No 103100"

c1910 (g).

Glass sphere Dia115. Cathode extension Dia35 L100. Anode and anticathode extensions Dia18 L40. Concave cathode. Circular flat anode.

972 (HERLUFSH). Test stand.

Signed: D.R.G.M. / 685

c1820 (g).

Black painted wood. Base Dia210.

Baluster shaped pillar Dia85 H290. Ball joint at the top of the pillar. Ball Dia50 fastened by wooden set screw. Mounting rod L790 with wooden clamp at one end.

973 (HERLUFISH). Valve rectifier.
Signed: "N&V RECTIFYING VALVE / VALVE No 2105 ANODE No D 11756 / TYPE A 220/30 MAX.INVERSE TENSION 220 kV peak"
Made by: Newton & Wright Ltd, 68 Ballard's Lane, N3.

c1920 (g).
Glass sphere Dia220. Two opposite extensions Dia70 L210. Nickel plated caps with connections as household bulbs. Overall L850.

974 (HERLUFISH). X-ray tube.
Signed, etched in the glass, with balance surrounded by "G" and "30962 D.R.P No 109449 D.R.P. No 108100"
c1920 (g).
Glass sphere Dia110. Overall L350. Concave cathode. Anticathode. Anode polished in angle. The cathode extension has a glass extension L30 with a piece of copper wire sticking out.

975 (HERLUFISH 320). Incandescent bulbs. Three.
Not signed.
1883 (acquired).
Glass Dia53. Mounted in copper spirals. Carbon filament still working. H70 incl Copper spiral. Mounted on wooden stand with provision for four bulbs, one gone. Presented to Herlufsholm in 1883 and allegedly coming from Edison's own laboratory.

976 (HERLUFISH). Coil, induction. Ruhmkorff.

Signed: Max Kohl / Werkstätten für Präzisionsmechanik / Chemnitz i.S. (probably catalogue no 95324)
c1900 (g).

Wooden base 950x370x170. Ebonite coil cover. Brass fittings. Ebonite and brass switch. Secondary coil Dia165 L460. Spring interrupter at one end, mercury interrupter at the other.
Ref: Kohl III, p 982.

977 (HERLUFISH). Interruptor.
Signed on the motor: SIEMENS-SCHUCKERT. cot. GM 25 (or 2.5) No950637E 220. j 0.38. n 2000. 46W. (The interruptor has no 54840).
c1900 (g).

Mercury. Black painted cast iron house Dia210 H170 on four iron feet. Cast iron lid, screw-fastened, has two hollow uprights cross section 60x25 with hose connections and stop cocks. Mounted on the uprights is electromotor with vertical axle to interruptor below. Overall H~500.

978 (HERLUFISH). Condenser.
Signed: AKTIESELSKABET / DANSK TELEGRAFONFABRIK / COPENHAGEN
c1900 (g).

Variable-plate. Wooden base 295x290x40. Four iron pillars support ebonite plate 290x290x21 holding a cylindrical glass vessel Dia275 H210 against the base. It contains the oil-immersed variable condenser with ten stationary plates and nine rotatable, turned by a knurled knob at the top. Ebonite scale 0-18 over a 180° arc. Two brass terminals at the top.

979 (HERLUFSH). Galvanometer.

Moving coil. Mirror.

Signed: H. STRUERS CHEMISKE
LABORATORIUM / KØBENHAVN
c1935 (catalogue)

Vertical U-shaped magnet H125 with moving coil frame suspended in thin cord L130 with mirror. Zero adjustment by turning a knurled knob at the suspension fitting. Sheet metal housing 155x70x60 with glass front. Wooden base 140x140. Overall H320.

980 (HERLUFSH). Galvanometer.

Signed: St.N.T.S.'s. FABRIK / KJØBENHAVN / No 43638.

Made by: Store Nordiske Telegrafsel-skab, Copenhagen.
c1920 (g).

Wooden base 170x134x22 upon this a turned wooden plate Dia126. Coil with vertical axis Dia69 H32 covered with fish-skin-like paper. Black wooden top and bottom. Inside the coil is the moving coil with horizontal axis with aluminium (?) shield shaped to fill the circular central opening Dia35. Index pointer vertical to silvered scale 10-0-10 on brass base. Zero adjustment by iron screw in the magnetic field. Limiting screws for left and right maximum deflection. Printed on top of coil "8500 V 800 Ohm 700 V 200 Ohm". Three brass terminals at one end, four at the other. Domed glass cover Dia85 H125.

981 (HERLUFSH). Galvanometer.

Signed on the silvered scale:

C. Weitzmann

Late 19th century (g).

Referred to as "Chr. Sørensens Multi-

plyer, 1866", based on Nobili's invention. Oak base 205x120 with four levelling screws. Two wooden up-rights support wooden frame for galvanometer coil. In this and above are magnetic needles suspended in thin cord. Below the top needle is silvered circular scale 0-90-0-90° in 1° divisions. The whole structure can be turned slightly by means of a brass handle (zeroing).

982 (HERLUFSH). Discharge tube.

Signed: H. Struers chem Laboratorium / Kjøbenhavn K Skindergade 38
c1900 (g).

De la Rive's rotating electron beam. Wooden base 130x80. Vertical coil Dia65 L130. Pear shaped vacuum tube over the protruding core of the electro magnet. Overall H240. Max Dia80.

983 (HERLUFSH). Galvanometer.

Signed on top of the brass house:

St.N.T.S.'s FABRIK / Kjöbenhavn / No 37123

Made by: Store Nordiske Telegraf Sel-skab, Copenhagen
c1900 (g).

Suspended magnet. Mirror. Thomson astatic type. Ebonite base 184x168. Two spirit levels. Two pairs of coil Dia50 mounted one above the other with horizontal axis and four terminals. The assembly covered by cylindrical brass house with circular glazed aperture for mirrorlight. On top of the house is rack and pinion zero adjustment. Curved controlling magnet mounted on post above the instrument for magnetic field compensation.

984 (HERLUFSH). Galvanometer.
Moving coil.
Signed: UNIVERSALMETER / 71176
HM / H.STRUERS CHEMISKE LABO-
RATORIUM / KØBENHAVN AAR-
HUS

Made by: Helweg-Mikkelsen, Copenha-
gen

c1930 (g).

Universal. Integral black case
134x108x55 with hinged lid. Under this
is the instrument face with circular dial
and terminals for ranges: 0-5, 10, 25,
100, 250 milliamp and 0-2.5 mA
0-5, 10, 25, 100, 250 volt and 0-0.1 V

985 (HERLUFSH). Discharge tubes.

Two. Geissler tubes.

Not signed.

c1900 (g).

Elaborate glasswork, with spiral inner
tubes. One 360x240 has three turns
and only part is evacuated, the other
L420 has spout for evacuation.

986 (HERLUFSH). Discharge tubes.

Crooke's. Five.

Not signed.

c1900 (g).

Dia50 L250. One with rolling mica
wings, two to be evacuated.

(Sir William Crookes, 1832-1919. Pub-
lished in 1879 work on the phenome-
non of discharge at such low pressures,
that the discharge was invisible. He sup-
posed that negatively charged particles
of "radiant matter" were emitted from
the cathode. He produced a series of
novel demonstrations with specially
designed vacuum tubes)

987 (HERLUFSH).

Electric railway carriage.

Not signed.

Made by: Max Kohl, catalogue no
62890.

c1900 (g).

Four brass wheels Dia40. Wooden
board 133x80. Two coils. Circular
electromagnet Dia50. Shuntmotor.
Commutator. No rails.

988 (HERLUFSH). Rotation apparatus
for Geissler tubes.

Not signed.

Late 19th century (g).

Mahogany base 163x125. Four termi-
nals. Two brass pillars H60 support a
wooden yoke L103. Between the pillars
is an electric motor with vertical axle,
supported by the yoke and rotating a
holder for a horizontally mounted
Geissler tube above the yoke. Demon-
strates the periodic nature of dischar-
ges in vacuum.

989 (HERLUFSH). Tesla apparatus.

Signed: PHÖNIX / Hochfrequenz-
Bestrahlungs-apparat / Type E Volt
220/110 PK No 52792 / Made in Ger-
many

c1930 (g).

For medical treatment. Black bakelite
(or ebonite) housing Dia130 H70, con-
taining the complete electric mecha-
nism. Supply 220 or 110 V. Handle for
inserting Tesla tubes. Three of these
are extant, two seem to be missing.
Wooden box 280x240x110. Lock and
handle as a suitcase; covered with green
imitated snake skin.

990 (HERLUFSH). Tesla apparatus.

Signed: FELMA / 110-220 Volt / No
226984 / F.D. (probably Danish.

Instructions in Danish)

c1930 (g).

For medical treatment. Case 340x225-x115 integral with the instrument. Terminals for 220 V and for handle to accomodate one of the Tesla tubes. Adjustment for frequency (marked "Frekvens") and power (marked "svag" (weak) and "stærk" (strong)). Five different tubes. The case is in the shape of a suitcase covered with black paper, the lid lined with mauve velvet.

991 (HERLUFSSH). Galvanometer.

Signed: Physikalische Werkstätten / Göttingen / No 502.

c1900 (g)

Moving coil. Mirror. Circular metal base Dia130, painted green. Brass levelling screws. Bubble level. Two terminals. Vertical U-shape magnet. Glass panels on back and front of magnet. Brass tube for suspension at the top H225. Overall H385.

992 (HERLUFSSH). Rotation apparatus, to demonstrate pulsating current.

Signed: Instrumentfabrikken "Fysik" / ERIK WEITZMANN / HILLERØD - København.

c1920 (g).

"Feddersen's apparat", (Danish physics teacher 1835-1906). A spark gap is rotated at a radius 100, whereby the pulsating light from the sparks will be seen. Wooden base 240x135. Brass uprights support axle for hand driven wheel Dia150 which rotates axle with wooden board on which the spar gap is mounted.

993 (HERLUFSSH). Electrometer, quadrant.

Signed: Max Kohl A.G. / Werkstätten für Präzisionsmechanik / Chemnitz i.Sa. / Cornelius Knudsen c1900 (g).

Mirror. Dolezalek type. (Friedrich Dolezalek, 1873-1920). Wooden box 205x150x145 with glass front. Four brass quadrants are mounted on ebonite base. Brass vane inside the quadrants is suspended in a coated, conducting quartz fibre. Three levelling screws. Terminals on top of box. Glass suspension tube L450. The Max Kohl mechanism seems to be built into case by Cornelius Knudsen.

Ref: Whipple 8, no 199.

994 (HERLUFSSH 447).

Carriage with propeller.

Not signed

Made by C.Weitzmann

1911

Iron propeller with three blades. Dia70. Mounted on iron axle Dia10 in tube Dia11 as bearing. Supported on two cast iron frames with two and one wheels. Overall L125 H150.

Ref: Weitzmann, fig 44.

995 (HERLUFSSH). Double cone rolling up a slope.

Not signed.

c1820 (g).

Wooden cone and slope. Cone L140 Dia60 (actually not conic, but with "concave" taper). Triangular slope, sides 130.

996 (HERLUFSSH). Spirit lamp.

Not signed.

1850 (acquired).

Brass Dia50 H50 shaped as hemisphere. Wooden base 90x60, two pillars, gimbal mounting. Overall H110.

997 (HERLUFSH). Valve models.

Two.

Not signed.

1850 (acquired).

Boxwood, Dia130 with central section cut out conically. In- and outlet marked as black grooved lines. 4-way and 2-way valves.

998 (HERLUFSH 648).

Rotation apparatus.

Not signed.

1912 (acquired).

Mahogany base 215x160 with four wooden feet with one level screw. Baluster turned iron pillar H235. Wooden bracket with vertical worm gear fastened by clamp. This non-locking worm is rotated by a brass ratchet Dia100. The mounting seems to be made locally.

999 (HERLUFSH). Joule's experiment. The mechanical equivalent of heat. Signed on brass plaque: Alf. Gregersen / Mekanikus / Kjøbenhavn c1900 (g).

Cast iron base 435x255. Rotating brass calorimeter Dia100 H110 inside a shiny brass shield. Rotation by angled gears. Vanes inside the calorimeter are held stationary by a lever arrangement and weight acting as counter force to the frictional force created by fluid inside the calorimeter. Overall H540.

1000 (HERLUFSH 84).

Rotation apparatus.

Not signed (probably Danish made (remarkable apparatus))

1804 (acquired).

Centrifugal force demonstration. Oak base 235x230x30 with two wooden pil-

lars H175 connected at the top by a wooden yoke L145 having brass bearing for vertical axis. Two higher wooden pillars are connected by a yoke L210 and has the other bearing for the vertically rotatable axle. The drive gear is a turned wooden disc Dia145 with iron pins as gear-teeth. Accessories to be mounted by thumb screws on brass bushing at the top of the axle, (a) oak bar L360 with two ivory spheres on a brass rod for demonstration of centrifugal-force equilibrium; (b) oak bar with four glass tubes on slant for demonstration of centrifugal gravitational field; (c) four iron springs with weights showing centrifugal force in equilibrium with spring force; (d) glass sphere with mercury and water; (e) model of tumbler-dryer (possibly newer). Overall H430.

1001 (HERLUFSH). Windlass. Model.

Not signed (probably Danish).

1850 (acquired).

Wooden base 220x150. Two turned wooden pillars H190 with brass worm gear and wooden pulley. Brass crank Overall H250.

1002 (HERLUFSH 247). Winch, differential. Model.

Not signed (probably Danish).

1876 (acquired).

Wooden base 220x150. Two turned wooden pillars Dia20 H200. Boxwood double pulley Dia22 and Dia16. Brass crank and handle.

1003 (HERLUFSH). Hoist, screw. Model.

Not signed (probably Danish).

1876 (acquired).

Wooden base 235x155. Two turned pillars Dia23 H200. Brass yoke with nut in which a screw is turned by a brass crank Rad80.

1004 (HERLUFSH 249). Crane.
Model.

Not signed (probably Danish).

1877 (acquired).

Wooden base 185x180 with brass model crane L175. Gear with small ratchet. Friction brake for use when the ratchet is released.

1005 (HERLUFSH 272). Capstan.
Model.

Not signed (probably Danish).

1877 (acquired).

Wooden base 205x205. Wooden pulley, maximum Dia50 H80. Brass top. Four levers for pushing (one missing).

1006 (HERLUFSH).

Puppets descending stairs.

Not signed.

c1880 (g).

Paper covered softwood stairs, fold into a box 280x82x65. Two dolls ("chinese") connected by two hollow bars L145 containing mercury.

1007 (HERLUFSH). Press.

Mechanical. Model.

Not signed.

1850 (acquired).

All wood. Base 150x60 on two turned feet. Screw rod moves a block vertically between two columns H130 with guide-groove. A yoke L105 connects the top of the columns. The screw rod has at the top a wooden wheel with worm gear which can be turned by a wooden worm with a crank. Overall H190.

1008 (HERLUFSH). Press.

Mechanical. Model.

Not signed.

1850 (acquired).

All wood. Base 135x80. Two columns H140 support a yoke with a threaded hole in the middle through which a boxwood screw can move a plate vertically as a vice.

1009 (HERLUFSH). Steam engine.

Model.

Not signed.

1862 (acquired).

Double acting. Mahogany base 310x183. Four turned wooden columns support two mahogany yokes with bearings for main axle with crank and eccentric for slide valve. Cylinder and slide valve are of brass with glass sides; connecting tubing is glass. Iron fly wheel Dia140. Overall H330

1010 (HERLUFSH). Vernier.

Demonstration model.

Not signed.

1850 (acquired).

Boxwood. 215x110 with sliding piece in dove-tail guide.

1011 (HERLUFSH). Adhesion plates.

Not signed.

c1800 (g).

Two brass plates Dia76 with heavy brass handles. Overall L170. Box cut out to shape with the plates 192x83x95.

1012 (HERLUFSH). Adhesion plates.

Not signed.

c1800 (g).

Two glass plates Dia78 with glass knobs. Overall L60.

1013 (HERLUFSH). Looping track.

Signed: C. Weitzmann

c1890 (g).

Iron bar U-shaped cross section bent in loop for falling steel ball. Wooden base 120x90. Overall H390 L370.

1014 (HERLUFSH). Pendulum.

Physical (or compound).

Not signed.

c1900 (g).

Iron base 110x75. Two brass pillars L140 with bearings for the pendulum. This is a brass rod L300 divided in centimetres and suspended at the middle. Two brass weights Dia22 L18 movable along the pendulum, to vary its centre of gravity and moment of inertia, kept in position by set screws.

1015 (HERLUFSH). Gyro. Spherical.

Not signed.

c1830 (g).

Marble (?) sphere Dia60 mounted rotatable in three gimballed brass rings. Outer ring Dia110 supported by a pedestal of turned wood Dia80 H100. Base of black turned wood Dia175 with groove for glass dome Dia130 H260. The purpose is possibly to demonstrate precession.

J.G.F. Bohnenberger (1765-1831) invented the instrument in 1817 to demonstrate movements of celestial bodies.

Ref: Rosenberger, p 441.

1016 (HERLUFSH).

Rotation apparatus.

Signed: STRUERS

1936.

Cast iron frame cast in one piece, designed for use horizontally or vertically;

the drive wheel Dia225 can be mounted in two different holes, one oblong for tightening the pulling rope. Overall L500 W230. No accessories.

Ref: No. 8085 in Struers' catalogue, issued 1996.

1017 (HERLUFSH). Gyroscope.

Signed J. Nissen

c1860 (g).

"Precession apparatus according to Fessel". Brass base Dia80 with steel point at H110. A Gyro wheel Dia102 mounted in steel ring is counterbalanced by a brass weight. Another Gyro wheel has a point at one end and a cup at the other, Dia85.

Fried. Fessel invented the instrument in 1853 to demonstrate precession.

1018 (HERLUFSH).

Revolution counter.

Not signed.

c1900 (g).

A steel wheel Dia33 has a worm gear along the rim and passes under a fixed pointer. This wheel, or disc, has two scales, 0-100 and 0-10.000. The worm drive is on axis with a point to press against the rotating axle of a machine. All is mounted in a small key-shaped housing of white metal. Overall L88 W50. Card-board box, linen covered, 100x50x16.

1019 (HERLUFSH).

Stool for acceleration of gyroscope.

Signed: MAX KOHL A.G. / Werkstätten für Präzisionsmechanik / CHEMNITZ i Sa. / Cornelius Knudsen

c1910 (g).

Wood. Base 538x240. At one end are two brackets supporting bearings for a pulley Dia170 L90 with a brass crank. At

the opposite end of the frame are similar but foldable brackets, which, when folded up, may support the gyroscope to be accelerated. Around it's axle may be wound a cord to be pulled by the pulley and crank. A brass gyroscope to suit has Dia130 and axle L170.

1020 (HERLUFSH). Parallelogram of forces apparatus.

Not signed.

1876 (acquired).

Mahogany base 320x155. Two brass uprights with two adjustable pulleys. Three weights are balanced, two at each end of a cord over the pulleys and one tied to the middle of this cord. The cords showing direction of the forces.

1021 (HERLUFSH 189). Balance, educational.

Not signed.

1856 (acquired)

Two brass arms 470x27x5 with holes for weights supported on turned wooden pillar H455. Wooden base 290x170. Overall H470.

Note on the instrument: "De tilhørende lodder er udført af kunstdrejer Wandinger i Næstved".

1022 (HERLUFSH). Clock, pendulum. Educational.

Signed: C.Weitzmann

c1900 (g).

Anchor regulator. Second's clock mounted on laboratory stand. Brass pendulum maximum L380. Brass mechanism. White painted dial Dia170.

1023 (HERLUFSH). Balance. Decimal. Not signed (probably locally made). c1900 (g).

Wooden base 420x155. Mahogany pan. Brass beam. H280.

1024 (HERLUFSH 88). Percussion apparatus. Mariotte's.

Not signed (probably locally made).

1824 (acquired).

Wooden base 340x260. Four pillars H310 connected at the top by yokes, two opposite ones having inlaid brass bands with adjusting thumbscrews for holding cords for ivory spheres. Four spheres Dia20, one sphere Dia15.

1025 (HERLUFSH). Pulley frame.

Not signed.

Mid to late 19th century (g).

Wooden base (softwood) 520x160.

Wooden frame 420x650. Rosewood pulleys Dia30. Brass weights, (a) fixed pulley; (b) one moving and one fixed pulley; (c) block and tackle; (d) block and tackle, heavier, with chain.

1026 (HERLUFSH). Wave apparatus.

Ling's.

Signed on brass plaque: P.A.Nordstedt og Söner / Stockholm

c1920 (g).

Vertical iron frame L1600 H750. Iron bar feet L350. 20 thin strings suspended from the top of the frame support small leaden balls which are interconnected by strings. Momentum is transmitted from one ball to the next, when moved.

1027 (HERLUFSH).

Torsion apparatus.

Signed: E. Leybold's Nachfolger /

COELN-RHEIN

c1900 (g).

For harmonic oscillations. Wooden

base 563x380. Two iron uprights L1000 carry a yoke supporting at the middle a steel wire L850 with a brass plate Dia225 and underneath this a weight (1kg). A small brass weight can be placed eccentrically on the brass plate. Two strings lead from the brass plate perimeter over two pulleys to weight pans to produce moment of force.

1028 (HERLUFSH). Wave apparatus.
Signed: H. STRUERS CHEMISKE
LABORATORIUM / KØBENHAVN
AARHUS
c1900 (g).

Demonstration of longitudinal waves by casting shadow. Painted wooden base 280x195. Two cast iron uprights with bearings for horizontal axle with crank. On the axle are 24 eccentric circular discs. On each disc rests the end of a vertical iron rod. These rods extend upwards and are bent 90° in the same direction, parallel to the axle so that all the ends of the rods appear on one vertical line. These ends will show longitudinal oscillations in sequence with the discs on the axle.

1029 (HERLUFSH).
Rotation apparatus.
Not signed.
Mid 19th century (g).

Four iron feet H550 support a wooden platform 260x150. Upon this is a U-bracket with two bearings for rotating disc. Cord drive from brass wheel with crank-handle.

1030 (HERLUFSH). Insulating stands.
Two.
Not signed.
Late 18th century (g).

(a) Mahogany tripod, glass insulator Dia42 H750, brass spherical conductor at the top Dia150; (b) black painted tripod with turned baluster shaped column H600 continued in glass pillar Dia30 H340. At the top is a black painted conductor Dia120 L550 with box-wood Henley electrometer.

1031 (HERLUFSH). Electrostatic generator.
Not signed.
c1800 (g).

Two circular plates, both broken, Dia~400. Wooden base 520x335. Two pillars, (a) wooden to H500 extending in glass H170; (b) wooden to H230 extending in glass H440. Pillars support overhead brass conductor Dia120 L620 with spheres on the ends.

1032 (HERLUFSH). Falling plate apparatus.
Signed: MAX KOHL / CHEMNITZ
(only the tuning fork)
c1880 (g).

Pentagonal wooden base 400x350. Wooden upright 130x70x800 with wooden guides for vertical movement of glass plate app 80 mm wide. Separate tuning fork L280 with coil and interrupter; pointer at the end of one branch. Wooden base 340x100.

1033 (HERLUFSH).
Rotation apparatus.
Signed: STRUERS
c1940 (g).

Grey painted, shaped sheet iron plate to form a lane 445x125 for a trolley. In the middle is a pillar H~500 with a hook at the top for suspending force meter (spring balance). Beneath the middle

of the lane is stud for placing it in a rotating machine. An aluminium trolley with four wheels can move in the lane connected to the force meter by a cord via a pulley at the foot of the pillar. Weights and pendulum can be placed on the trolley.

1034 (HERLUFSH). Electrostatic generator. Friction.
Signed: WEITZMANN FREDERIKS-BORG

c1880 (g).

Open frame mahogany base 1150x600. Glass plate Dia620. Two glass pillars on each side H310 supporting axle for plates. Two vertical brass cylinder conductors Dia180 H300. Conductors, combs etc missing.

1035 (HERLUFSH). Air gun.
Signed on the lock: IO CHRISTIANIAHN / A WERNIGERODA
c1780 (g).

Wooden stock with built-in air receiver. Octagonal barrel 21 mm across L840 rifled, internal Dia10. The lock is chased with foliage, harts and female figure. Lock resembling flint lock.

1036 (HERLUFSH). Heat conduction apparatus.

Signed: Cornelius Knudsen / Kjöbenhavn

c1900 (g).

Wooden base 470x120. Wooden frame 330x420. Brass cylinder Dia75 L70 with horizontal axis has two spouts for inlet and outlet of hot water. A solid brass rod Dia16 L330 extends horizontally from the cylinder between the uprights of the frame. In this seven cut-outs accomodate bulbs of mercury-in-glass thermometers.

1037 (HERLUFSH). Barometer.

Not signed (probably locally made).

c1900 (g).

Apparatus for measuring atmospheric pressure by weighing. Wooden case 195x170x950, open at front. Base plate 310x290. At the top is vertically mounted a brass cylinder Dia~40 H100 with piston supporting a weighing pan beneath the cylinder. From the top of the cylinder a rubber tube leads to a glass tube dipping in a cistern with mercury, forming a manometer.

1038 (HERLUFSH). Telegraph.

Not signed.

c1850 (g).

Morse. Electromagnetic, allegedly made according to sketch by H.C.Ørsted. Semicircular mahogany base Dia480 with mahogany frame H700. Two heavy U-shaped electromagnets H210 iron core Dia30. The coils are made of copperwire Dia4. When current is applied to one of the magnets, an overhead steel bar is pulled downwards and with a hammer striking a 120 mm long steel point to give impression on a paper tape below. At the same time a string is pulled letting a hammer strike an overhead bell. A similar system at the other side of the frame is parallel to this. One side means "Dot", the other "Dash". Overall H730.

1039 (HERLUFSH). Acethylene gaswork.

Not signed (probably Danish).

c1900 (g).

Sheet metal cylinder Dia250 H400 contains water in which an inverted cylinder (bucket) Dia200 H450 with an iron net holds a supply of calcium carbide.

The instrument functions much like Kipp's apparatus.

1040 (HERLUFSH). Percussion apparatus. Mariotte's.
Not signed.

Mid 19th century (g).
Wooden base 600x200. Vertical open wooden frame lyra-shaped. From the top are suspended eight spheres Dia~40, four wooden and four made of ivory. Circular wooden scale with arbitrary divisions indicates the swing of the spheres. Overall H700.

1041 (HERLUFSH). Pendulum.
Conical.
Not signed.
c1880 (g).

Wooden tripod H1220 with three struts meeting at the top, where a steel wire L900 suspended in gimbals holds a steel rod with a sliding heavy brass sphere, thus forming a pendulum. The steel rod ends under the brass sphere in a fork, and can rotate in the horizontal plane. When the brass sphere is made to rotate, it will carry with it the fork. The fork in turn rotates a cylindrical skirt, which has been sooted for time measuring by means of a point fork with a steel point.

1042 (HERLUFSH 812). Electrostatic generator. Friction.
Not signed.
1863 (inf).
Two glass plates Dia540, one missing. The wooden base is shaped, about 730x680. Veneered boxwood. Bearings on one wooden and one glass pillar. Axle 500 above base. Conductors missing, probably separate units.

Label states: "Carl Winters originale Elektricismaskine udført i Wien 1863"

1043 (HERLUFSH). Magdeburg hemispheres.
Not signed.

Mid 19th century (g).
Brass Dia257 on iron base Dia130. When the sphere is disengaged from the base, the socket for connection to vacuum pump appears. Stopcock between socket and sphere. Heavy iron handles screwed to brass flaps on the two halves.

1044 (HERLUFSH 177). Hydraulic press.
Not signed.
c1900 (g).
Overall dimensions 780x275x750. Iron and brass on mahogany base. Complicated construction, the function of which is not clear. Brass cylinder of which the piston is moved by two levers. Oil reservoir with copper tubing and funnel for filling. Stand of iron and brass with brass columns H~300 turned to look classical.

1045 (HERLUFSH 198). Hot air machine. Prototype.
Made by: Brazier J. Faxøe, Stubbe-købing, Denmark.
1898 (inf).

A complete machine using hot air and atmospheric pressure much the same way as steam is used with Newcomen's atmospheric steam engine. The machine will be too comprehensive to describe here. Iron base ~1m² with heat generator, brass cylinder, levers, gears, flywheel, valves etc. It is said to have been operating satisfactorily, but with low efficiency.

1046 (HERLUFSH). Ship's propeller. Model.

Not signed.

c1950 (g).

Brass 260x380x350. Torpedoshaped body with propellerblades at the sides and lever above for turning the blades.

1047 (HERLUFSH). Steam engine.

Working model.

Not signed.

1862 (acquired).

Copper boiler Dia140 L420. Brass cylinder external Dia59 L120. Rotating slide valve. Condenser. Feeding pump for condensate. Watt's centrifugal controller. Flywheel Dia520. The engine is built into a cast iron base. The rocking arm is supported by beams on six turned pillars. Set up to operate a water pump. All mounted on a wooden base plate.

1048 (HERLUFSH). Air gun.

Not signed.

c1800 (g).

Wooden stock with side mounted sphere for compressed air (missing). Iron barrel external Dia14, internal Dia9, not rifled L850. Overall L1290.

1049 (HERLUFSH). Clock. Second's.

Not signed.

Mid 19th century (g).

Iron tripod with three brass levelling screws. Green painted wooden upright H1360. Brass clock mechanism with weight and anchor escapement. Pendulum suspended in steel band. Iron disc Dia180 as pendulum weight.

1050 (HERLUFSH). Air pump. Vacuum.

Not signed (probably Danish).

Mid 19th century (g).

Single vertical barrel Dia75 L360. Brass plate Dia250 mounted on top of the barrel. The barrel is bolted to a wooden base through which a rack moves the piston above. Crank operates a pinion built into the base.

1051 (HERLUFSH). Electrostatic generator. Friction.

Not signed.

c1800 (g).

Mounted on wooden box 750x750.

Four glass pillars Dia28 support bearings for crank axle of black painted wood. Glass plate Dia620. Four more glass pillars Dia22 above support the prime conductor Dia100 L440 of black painted metal. Leather cushion. Bone screws and black painted wooden nuts. Secondary conductor separate on glass pillar Dia21 H270.

1052 (HERLUFSH). Radio transmitter and receiver.

Signed: E. LEYBOLD'S / NACHFOLGER / COLN A/RH.

c1920 (g).

Two brass spheres as spark gap. External high tension supply (induction coil). Parabolas 560x400 mounted in wooden frames. Cohere receiver Dia5 L200. Overall L700 H735.

1053 (HERLUFSH). Condenser.

Not signed.

1803 (acquired).

In local notes named Lightning pane. Glass plate 640x470 in mahogany frame. Tinfoil on both sides 500x330 with metal button at the middle for connections.

1054 (HERLUFSH). Air pump.
Vacuum.

Signed: KOHL'S OELLUFTPUMPE /
D.R.P. 169180

c1910 (g).

Oil sealing. Cast iron base 450x300 with cast iron upright H700. At the top this has a bearing for the end of a lever, which is operated at the middle by a drive rod and at the other end driving the piston of the pump. Flywheel Dia400. Glass plate Dia260. U-tube manometer under glass dome. Mounted on a table and driven by electric motor.

1055 (HERLUFSH). Fire escape ladder. Model.

Not signed.

c1900 (g).

L800. Expandable. On carriage with four wheels. Frame and supporting struts. Model of the school's fire escape.

1056 (MEDIHIST 2.533). Microscope.
Culpeper type.

Not signed.

Made by Nicolaus Bastholm (1706-71)
c1750 (g).

Brass balusterturned pillars support the circular brass stage and the tube. Pasteboard tube covered with ornamented vellum. Turned wooden eyepiece. Wooden nosepiece threaded for objective. Substage mirror is mounted on the wooden base which has a drawer for accessories. The mirror is a bi-convex lens, silvered on one side. Circular rotatable brass plate with 12 holes for objects. Four objective lenses in wooden fittings. This microscope seems to be identical with another (defective) one, signed 'Bastholm Kiøbenhavn'.

Ref: Moe, p 60, fig 4.4.

1057 (MEDIHIST 353). Microscope.
Culpeper type.

Signed: Bastholm, Kiøbenhavn
c1750 (g)

Except for details of the stage similar to no 1056, but in poorer condition.

1058 (MEDIHIST 1.465). Microscope,
lucernal.

Signed: Fra Professor Smith's Etablissement. Kiøbenhavn

c1810 (g)

Pyramidal mahogany box L450 supported on a brass pillar on tripod with cabriole feet. On the pillar is a horizontal wooden bar with brass rack and pinion for focusing, and at the end of this a brass pillar supporting the vertical stage and the lenses. At the opposite end is a pillar mounted pinhole viewer. Large lenses built into the box; opaque glass plate missing. Overall L1050.

Ref: Moe, p 120.

1059 (SKAARUP). Bimetal apparatus.
Demonstration of thermometer.

Not signed.

Late 19th century (g).

Cast iron frame on three feet. Bimetal spring (probably iron and copper) L220, mounted so as to move horizontally, pushing a lever arm L100 as index. Painted scale 0-10, arbitrary. Overall L360.

1060 (SKAARUP). Induction apparatus. Probably ignition coil.

Signed on label in the lid: Professor E. Jünger's / mechaniske Etablissement / 37, Dosseringen langs Sortedamsø 37 / nærmest Nørrebro / Kjøbenhavn
c1868

U-magnet L220 W105. Two coils Dia50 L65 placed at the ends of the magnet poles. A steel yoke can be pushed to connect the magnet poles, held by a ratchet under load of a steel spring. This can be released, thereby breaking the magnetic circuit and creating an EMF in the coils. Brass terminals for induced current. Fruit wood push knob. All built into mahogany case 293x154x105.

1061 (SKAARUP). Induction coil.

Signed: Ford

c1920 (g).

Wooden case 130x80x55. Interrupter at one end with iron core, bundle of thin rods sticking out. Primary connections at end; secondary at the top.

1062 (SKAARUP). Measures, volume.

Six.

Not signed.

c1900 (g).

Soldered sheet iron. Cylindrical with handle.

(a) H145 marked 0.5 L, (b) H110 marked 1/4 L, (c) H54 marked 0.1 L

(d) H45 Marked 0.05 L (e) H35 marked 0.02 L (f) H29 marked 0.01 L

1063 (SKAARUP). Steam engine.

Model.

Signed G R / N / BAVARIA

c1900 (g).

Vertical copper boiler Dia76 H120. Spirit heating. Glass level indication. Weight loaded safety valve. Whistle. Stopcock for steam to cylinder. Fly-wheel Dia110. Iron base 110x110. Likely supplied by Weitzmann, as similar engine appears in catalogue.

1064 (SKAARUP). Hygrometer.

Daniell's.

Not signed.

Mid 18th century (g).

Two glass bulbs Dia~50 connected by twice angled glass tube. One bulb has golden band and contains a thermometer -7 to 40° Reaumur, the other is covered by muslin. Glass stand H265 with thermometer -20 to 40° Reaumur.

1065 (SKAARUP). Hygrometer.

Regnault's dew point instrument.

Signed: C. Weitzmann Frederiksborg

Late 19th century (g).

Cast iron base Dia100. Brass pillar with bracket for two rings supporting two polished metal cylinders Dia28 H70. Screw on lids with thermometers -30 to 50°C. One of the cylinders has brass tubes for blowing air through its content of volatile liquid.

1066 (SKAARUP). Rotation apparatus.

Educational.

Signed: C. Weitzmann

c1900 (g).

Cast iron frame L720 to be placed vertically or horizontally. Cast iron cranking wheel Dia240 with cord drive to brass wheel Dia30 with brass axle and boxwood bush for accessories. These are (a) two brass spheres moving on brass rod in cast iron frame L237; (b) Watt centrifugal regulator H160; (c) glass sphere Dia80 with mercury and water, (d) open brass cylinder with perforations to demonstrate the centrifuge; (e) see-saw glass tube containing a small amount of mercury; (f) cast iron frame with two brass buckets Dia42 H25, tilting during rotation; (f) four steel springs to demonstrate the flattening of the earth at the poles.

1067 (SKAARUP). Tantalus' beaker.

Not signed.

Late 19th century (g).

Glass. Maximum Dia140 H190. Circular glass base Dia120. Glass tube open below and sticking up from the bottom to the interior of the beaker. A covering glass bell for siphon action is missing. Overall H190.

1068 (SKAARUP). Pascal's vases.

Not signed.

Mid to late 19th century (g).

Mahogany case 265x265x200 lined with white painted sheet iron. At the centre is a mahogany tripod supporting a brass ring with recess matching brass rings on glass vessels of varying shape. A mahogany upright supports a brass balance which has one end above the centre of the box, and with a cord holds a brass plate up against a seat under the brass ring (Boyle's valve). The other end of the balance beam has a brass pan for weights. Two glass vessels with brass seat, one cylindrical Dia50 H260 and one conical (narrower at the top) H260. A traditional conical glass, wider at the top, is not extant.

1069 (SKAARUP). Heat expansion apparatus.

Not signed.

Mid to late 19th century (g).

Cast iron frame L310 on three feet. Brass rod L270 rests horizontally at one end against a set screw; at the other end it pushes against the lower end of a vertical index, 5 mm below the fulcrum. Index L220; scale divided 0-10 cm. Below the bar is a tray, cast in the iron base, for burning spirit.

1070 (SKAARUP). Electrostatic generator. Wimshurst. Induction. Signed: CORNELIUS KNUDSEN / Hof-Instrumentmager / København c1900 (g).

Wooden base 400x245. Two rotating glassplates Dia315 with 24 foil strips. Two Leyden jars Dia47 H165. Ebonite pillars H210 support brass conductors and the two electrodes.

1071 (SKAARUP). Spectroscope.

Not signed.

c1900 (g).

Iron tripod and pillar. Brass cylinder Dia83 houses the prism. Collimator Dia26 L150 with adjustable slit and push focus. Telescope L160 with rack and pinion focus. Scale tube with push focus and horizontal adjustment of the scale in the field of view. At the end of the scale tube is a swing arm to hold a light.

1072 (SKAARUP). Morse receiver.

Signed: SIEMENS & HALSKE / BERLIN / No 1993

c1863 (g).

Brass. Two coils. Weight driven clock. Wooden base 350x210. Mounted on table 780x400x770 with reel for paper strip supported on cast iron stand. Marked "T.MYGIND / MARSTAL / No 29". Mygind became telegraph operator in Marstal in 1863. Marstal, home of a large fleet of small ships, had one of the first telegraph stations in Denmark.

1073 (SKAARUP). Air pump. Vacuum.

Signed: C.Burmeister / Polyt Elev / 1841.

(Carl Christian Burmeister (1821-98) was 1836-42 studying at the Polytechni-

cal University, where Ørsted noticed his skills, and used him as assistant. In 1846 Burmeister founded a machine factory, which later became known as Burmeister & Wain).

1841.

Brass barrel Dia60 L180. The piston is hand operated by a lever via an arrangement of links transforming rotation to parallel movement. Glass plate Dia260. U-tube mercury manometer under glass dome.

1074 (SKAARUP). Dynamo.

Signed: P.OTZEN & THORSTENSON / KJØBENHAVN

c1900 (g) (the firm founded in 1884).

Wooden base 340x280. Field magnets H100. Overall H480. Commutator. The armature is driven by crank with gearing.

1075 (SKAARUP). Balance. Chemical.

Signed: G.W.KLEIN / KJØBENHAVN

c1890 (g).

Mahogany cabinet with drawer, fluted corner pillars and glass panels. Brass balance, beam L180. Agate bearings. Arresting by lowering the beam to rest supported by brass struts from the foot of the pillar to the end of the beam supports. Brass pans Dia65.

1076 (SKAARUP). Telescope.

Refracting.

Signed: CORNELIUS KNUDSEN / KJØBENHAVN

c1900 (g).

Terrestrial. Brass tube Dia50 L650. Objective Dia50 with push fit dustcover. Eye piece Dia35 in draw tube L350, rack and pinion focus. Brass pillar with universal joint. Three cabriole folding feet. Fitted oak box 730x185x100.

1077 (DASRIBE E730). Coin scale.

Not signed by maker.

c1830.

Sovereign balance with sliding weight. Brass. Mahogany box 132x24x19. The lid is hinged at the short side and opens 180 deg. Label states: "The turn to be at the End for a Guinea, the other Way for Half-a-Guinea, and the Slide at the Cipher where it will stop -- It stops several Times in removing towards the Centre, each a Farthing above the Standard -- When Gold is short of Weight, remove the Slide the other Way, where every division is a Penny." (?)

1078 (DASRIBE E731). Coin balance.

Not signed by maker.

Mid 18th century (g).

Steel beam. One triangular and one circular brass pan. Brown wooden box 133x65x25, brass bound. Weights marked "1 Ginee", "2 LsDor", "1 LsDOR", "1 LsDOR", "1 RYDER", "1/2 RYDER", "4 LsDOR", "1 DUKAT".

1079 (DASRIBE E31). Nest of weights.

Not complete.

Not signed by maker.

18th century.

One weight with hinged lid, the others fitting inside. Marked 16, 8 and 4, resp. Dia50, Dia43 and Dia35. Marked with a hand (Antwerp) and a lamb (?).

1080 (SVENNAVI). Binnacle.

Educational.

Signed: IVER C.WEILBACH & CO / COPENHAGEN

c1940 (g).

Teakwood. Dia400 H1200. Brass top with gimbal mounted compass. Compensating iron spheres Dia180. Two

openings with a total of 50 holes for compensating magnets. Marine compass, 64 point card, 0-360°. Clinometer.

1081 (SVENNAVI Nr 3). Binnacle.

Educational.

Signed: IVER C. WEILBACH & CO
KØBENHAVN

c1940 (g).

Wood. Octagonal about 400 across, H1000. Rotatable with scale on the floor 0-90-0-90°. Brackets for compensating iron spheres; spheres missing. Space for compensator magnets. 64 point compass, scale 0-360° with bearing dial with prism.

1082 (SVENNAVI Nr 4). Binnacle.

Educational.

Signed: IVER C. WEILBACH /
K.PRAHL & C.SØLVER /
INSTRUMENTMAGER /
AMALIEGADE 30 / KØBENHAVN

c1920 (g).

Teak. Octagonal base 570 across. Fluted column. Recesses for compensator magnets. Brackets for compensating iron spheres. H1080.

1083 (SVENNAVI 2). Binnacle.

Educational.

Signed: Kgl.Hof-Instrm / Cornelius
Knudsens Eftf / Nautisk Afdeling /
København

c1950 (g); (in 1948 Weilbach took over CN's nautical dept.).

Wood. Fluted column Dia340 H700 excluding brass hood H140 housing the compass. Brackets for compensating iron spheres, recesses for compensator magnets. 128 point compass, scale 0-360°, gimbal mounted, marked: IVER C. WEILBACH & CO 1755.

1084 (SVENNAVI). Azimuth mirror.

Signed: Cornelius Knudsens Etablissement for nautiske Instrumenter /
Kjøbmagergade 37 København
c1930 (g).

Sir William Thomson's model, to fit on mariner's compass. Oxidized brass. Spirit level. Rotatable prism. Magnifying glass.

Ref: Randier, p 28

1085 (SVENNAVI N26). Azimuth mirror. C.Clausens patent.

Signed: C.CLAUSENS PATENT N26 /
CORNELIUS KNUDSEN KBHVN
c1920 (g).

To place on the compass. Centrally pivoted. Oxidized brass. Unfolded L410. Slit and wire sights. Centrally mounted circular mirror with sighting line on the back. Spirit level. Filters to place on the sight. Wooden (pine) box 200x100x80.

1086 (SVENNAVI). Bearing sights.

Signed: IVER C.WEILBACH / SØLVER & SVARRER / INSTRUMENTMAGERE / AMALIEGADE 30 /
KØBENHAVN

c1920 (g).

Brass, painted black and white, to place upon the compass. Sights consisting of vertical slit 90° bent brass plate with wire suspended between the tip of the plate and the base. The slit plate is white inside and black outside. Mirror underneath. Overall L145 W67 H140. Wooden box 183X110X165.

1087 (SVENNAVI). Ship's log. Walker's Patent Harpoon.

Signed: T.WALKER'S / PATENT /
HARPOON / SHIP LOG / A1 /
LONDON

Trade label: H.E.HOLST /
ØSTERGADE 24

c1860 (g).

Brass L~500 including tow ring.
Rotator with four fins. Register with
three scales 0 to 1.0 to 10 and 0 to 100,
which can be covered by brass slide.
Compare item 384.

1088 (SVENNAVI). Ship's log.

Mechanical.

Signed: WALKER'S PATENT NEPTU-
NE SHIP-LOG

c1850 (g).

Only the register is extant. Dial
Dia~120 with three scales: 0-1, 0-100, 0-
500.

1089 (SVENNAVI). Bearing dial.

Signed: J.C.KROHN & SØN BERGEN

Late 19th century (g).

For taffrail mounting. Brass. Dia170.
Slit and wire sight. Scale 0-180-0° in 1°
divisions; also 64 compass points mar-
ked. Gimbal mounted with brass rod
and weight below to keep the dial
horizontal. Cylindrical gimbal housing,
presumably to be mounted in fitting
(missing) on the rail.

1090 (SVENNAVI). Bearing dial.

Signed: PATENT No 2559 / LONDON
POLARIS / IMPORTED / JUL.AL-
BRECHTSSEN & Co GÖTEBORG

Late 19th century (g).

Gimbal mounted in Mahogany case
with carrying strap. Case 270x260x205.
Brass dial Dia210 scale 0-90-0-90° and 0-
180-0°. Above this is the sighting vane
on equinoctial dial Dia130, adjustable
for latitude and with scale 0-180-0° and
hour scale I,II...V,VI,V,...II,I,XII,
XI,..VII,VI,VII...XII. Clinometer.

1091 (SVENNAVI). Bearing dial.
"PALINURUS".

Not signed.

c1900 (g).

Small equinoctial rotatable on compass
rose Dia220, scale 0-90-0-90°, also scale for
variation 45-0-45°. Lubber's line set at
ship's head. Table for "APPROXIMATE
DECLINATIONS FOR USE WITH THIS
INSTRUMENT". Gimbal mounted in
octagonal wooden case 260 mm across.
H220. Heeling meter at the gimbal, with
indication on the outside of the case.
Dials are blue (enameled) with white text.

1092 (SVENNAVI). Dipping needle.

Educational.

Signed: IVER C.WEILBACH & CO /
KIØBENHAVN

c1900 (g).

Wooden plate 300x300 with scale 0-90-
0° and 64 point compass rose. Vertical
wooden plate Dia275, rotatable about a
diameter on the centre of the compass.
Magnetic dipping needle L270, vertical
scale 0-90-0-90°.

1093 (SVENNAVI). Log ship.

Not signed.

c1900 (g).

Sector-shaped Rad160. Clutch consist-
ing of wooden ring and stopper to be
released by a jerk in the log line for let-
ting the log float horizontally on the
water when being heaved in. Reel
Dia180 L340 with two handles. Overall
L620. Line with knots.

1094 (SVENNAVI). Depth Sounder.

Clausen's control sounder.

Signed: C.CLAUSEN'S PATENT / No
246 / CORNELIUS KNUDSEN

KBHVN

c1920 (g).

(Carl Th. Clausen, Naval officer (1857-1938)). Brass cylinder Dia45 L660. Brass ring at each end for fastening by a cord to an iron frame with a heavy weight, Dia80 L220. The cylinder contains two glass pressure gauge U-tubes with scales 5-150 fathoms and 10-250 fathoms and with mechanism for closing at maximum depth. The scales to be viewed through glass windows in the brass cylinder. Overall L1100.

1095 (SVENNAVI). Globe.

Educational.

Signed: Kgl Hof Instrm / Cornelius Knudsens Eftf / Nautisk Afdeling / København

c1930 (g).

Dia300, black painted, white lines for equator, ecliptic, tropics and polar circles. Sturdy brass armillary with six meridians and equator. Dutch type wooden bases with four pillars, wooden cross and circular plate Dia320.

1096 (SVENNAVI). Sextant.

Signed: C.Plath No 7607 / Deutsche Seewarte 12 Nov 1917 / IVER C.WEILBACH / PRAHL & SØLVER / Instrumentmager / Amaliegade 30 / København 1917.

Brass. Frame with circles. Rad160. Brass scale -5 to 150°. Micrometer to 1 min. Two telescopic sights Dia29 L80. Pinhole sight. Filters for alidade and horizon mirrors. Marked on the limb: 7607 and a stylized figure with a sextant.

1097 (SVENNAVI). Telescope.

Refracting.

Signed on tube around the draw tube: CORNELIUS KNUDSEN / KJØBENHAVN

c1900 (g).

Brass. Tube Dia52 L650. Single draw, rack and pinion focusing. Dust covers missing. Universal joint mounting. Wooden tripod, folding feet.

1098 (SVENNAVI). Deflector.

Clausen's universal. Two.

Signed on brass label on the box: :

UNIVERSAL-DEFLECTOR / No 117 /

C.CLAUSEN's PATENT / IVER

C.WEILBACH / SØLVER & SVARRER

/ Instrumentmager / Amaliegade 30 /

KØBENHAVN

c1920 (g).

Brass ring Dia130, scale 0-90-0-90°, with sprung central pinion. Two magnets are placed vertically on a diametrical alidade. The distance between the magnets may be varied by turning a screw with left threads at one end and right thread at the other, thus keeping the magnets symmetrical with respect to the centre. Mahogany box 200x165x130.

1099 (SVENNAVI). Depth sounders.

Educational set.

Presumably made locally.

c1930 (g).

Wooden board with parts of sounders marked, (a) "Sir William Thomson's Patent"; (b) "LILLEY'S PATENS IMPROVED"; (c) "SIGURDSON'S PATENT 1595".

1100 (SVENNAVI). Compass.

Thomson's type.

Signed: IVER C.WEILBACH /

KIØBENHAVN

c1920 (g).

Brass bowl Dia270. The open card has 128 point rose, and eight magnetic needles suspended by silk threads. Sapphire cap and iridium point.

1101 (SVENNAVI). Morse receiver.

Signed: EVALD ANDERSEN'S /
MEKANISKE / ETABL / KØBEN-
HAVN

c1900 (g).

Wooden base 270x270. Brass housing.
Two coils, one armature. Brass gear
house for the paper drive 110x110x55,
operated from a rotating disc Dia~80,
which again is rotated by a friction
wheel, the speed of rotation being adju-
sted by positioning the friction wheel
relative to the centre of the disc. Motor
not extant.

1102 (SVENNAVI). Morse receiver.

Signed: DIGNEY^{RES} & C^{IE} / B^{TES} SGDG
No 7261

c1900 (g).

Wooden base 310x180. Two coils, one
armature. Spring clockwork. Brass gear
house 170x70x110. Paper reel Dia220.
Overall H400.

1103 (SVENNAVI). Morse receiver.

Signed: St.N.T.S.'s FABRIK / KJØBEN-
HAVN / No 46449

c1900 (g).

Mahogany base. Two coils, one armatu-
re. Spring clockwork, brass housing
70x70x115. Paper reel. Overall H440.
Made by: Store Nordiske Telegraf Sel-
skab.

1104 (SVENNAVI). Morse receiver.

Signed: EVALD ANDERSEN'S /
MEKANISKE / ETABL / KØBEN-
HAVN

c1900 (g).

Wooden base 370x110. Two coils, one
armature. Electric motor paper drive,
transmission by means of a friction disc
rotated by a rubber wheel on the motor

axle. Brass housing 105x45x105. Motor
speed adjustable in four steps.

1105 (SVENNAVI). Punched card
machine, 450x300x320.

Made by: Store Nordiske Telegraf Sel-
skab.

Signed GNT / GREAT NORTHERN /
TELEGRAPH WORKS / COPENHA-
GEN DENMARK / No 103288

c1940 (g)

1106 omitted

1107 (SVENNAVI). Rheostat.

Signed: MARCONI'S WIRELESS /
TELEGRAPH Co Ltd / No 16915
LONDON

c1910 (g).

Mahogany reel Dia215, overall L275.
Sliding contact on brass guide, ebonite
handle. Two terminals marked "TOP"
and "SLIDER".

1108 (DASRIBE 21). Coin balance.

Signed in ink on the box: Gemaect by
Jacob / Drielenburch inde Halsteeg /
int gout gewicht tot / Amsterdam. A°
1665.

1665.

Steel beam. One triangular and one cir-
cular brass pan. Wooden box
128x68x36 with hinged lid and a draw-
er. Cutout for the balance. Spaces for
square weights in the lid, held by a sli-
ding glass plate and in the drawer.

1109 (SVENNAVI). Short wave radio
receiver.

Signed: AKTIESELSKABET / DANSK
TELEGRAFONFABRIK

c1910 (g).

Four reels for wave lengths: 13-22 m, 20-
36 m, 32-48 m, 47-85 m.

1110 (SVENNAVI). Switchboard.
Signed: MARCONI'S WIRELESS /
TELEGRAPH Co Ltd / No 36190
LONDON

g1910 (g).
400x550. Voltmeter 0-160 volts. Ammeter 0-60 amperes. Knife switch.

1111 (DASRIBE 200x52). Brand for marking wooden volume measures. "1818".
Not signed.
1818.
22x10. Steel L299.

1112 (DASRIBE 200X51). Brand for marking wooden volume measures. "Ribe".
Not signed.
c1820 (g).
50x27. Steel L468.

1113 (DASRIBE 200x50). Brand for marking wooden volume measures. "F 6 R".
Not signed.
c1820 (g).
56x25. Steel L465.

1114 (DASRIBE 200x49). Brand for marking wooden volume measures. Crowned "C 7".
Not signed.
c1800 (g).
60x21. Steel L400.

1115 (DASRIBE). Measure. Volume. 'Pottemaal'.
Marked: crowned "C5" on side and rim. "M" on the rim.
1684.
Cast bronze. Dia97 H198. From Ole Rømer's certification office.

1116 omitted

1117 (PSYKOLOG). Morse receiver.
Sign: Siemens & Halske / Berlin / No. 8711.
c1900 (g)

1118 (PSYKOLOG PL 28/1986).
Kymograph.
Sign: D.B.Kagenaar / Utrecht
c1890 (g).
Mahogany cabinet 550x400x800 with glass panels, mahogany base with four feet. Drum Dia145 H180.
Carl Ludwig (1816-95) invented the kymograph in 1847. Used for recording physiological events, such as muscular motion, changes in blood pressure etc.

1119 (PSYKOLOG). Spectroscope.
Direct vision.
Sign: A. Krüss / Optisches Institut / Hamburg
c1900 (g).
Brass tube L450 on brass column H270, screws into iron tripod. Two micrometers. Rack and pinion focusing. Photo-scale tube, vertical to vision axis. Pine box 490x245x135.

1120 (PSYKOLOG PL 13/1986).
Chronoscope. Hipp's type.
Sign: M.Hipp / Neuchatel Suisse / N12805.
c1920 (g).
Polished wooden base 265x215 on four turned feet. Four turned pillars of lignum vitae with base and capital of boxwood H300 supporting a polished wooden plate 265x210. On the top plate is a brass weightdriven clock. One silvered clock dial Dia40 scale 0-100 another dial has Dia60 and scale 0-100. Every turn of the small hand moves the bigger hand one step forward. Induc-

tion mechanism for electrical time impulses. Start and stop by cords with ivory handles.

Ref: Zimmermann, 110-115.

1121 (PSYKOLOG PL 8/1986).

Ergograph. Alfred Lehman's model.

Not signed. (Probably made in Lehman's own laboratory).

c1920 (g).

Wooden plate 575x195 with mounted dynamometer (Salter's quadrant balance). To this is fixed an iron handle. Four fingers of a hand can pull this handle, while the palm rests on a wooden block fixed to the base plate. Dynamometer scale 0-200 "Danish" (meaning Pund). Measured is the force of the clenched fist.

Ref: Zimmermann, p 98-102 (showing similar instruments)

1122 (PSYKOLOG PL 18/1986).

Rotation machine with colour plates.

Not signed.

c1900 (g).

Cast iron base Dia115 with spring driven brass clock H160, turning an axle on which can be mounted coloured discs. Overall H370. For the testing of vision.

Ref: Funch, p 42.

1123 (PSYKOLOG PL 7/1986).

Tachistoscope.

Not signed.

c1900 (g).

To produce visual stimuli for use in studies of attention, learning and perception. Dropping frame type. Mahogany base plate 410x300. Upon this is a brass frame H505 W140 with two coils on a yoke, vertically adjustable to hold an dropping iron plate. Parts are missing.

1124 (PSYKOLOG PL 12/1986).

Mnemoneter. Ranschburg's.

Signed: E. Zimmermann, Leipzig, Nr 9.

c1920 (g).

Apparatus for testing perception, association and memory. Wooden box 220x220x90 with electromagnetic mechanism turning a circular disc in steps. On this can be placed a cardboard disc with five-digit numbers to be shown in an opening in the box cover. Other cardboard discs have figures, numbers or syllables.

Ref: Zimmermann, p 64-66.

1125 (PSYKOLOG PL 24/1986).

Camera, bellows type.

Sign: Budtz-Müllers Eftf / Kjøbenhavn

c1900 (g).

Mahogany, brass bound, fibre bellows. 305x220x250 (extended) and 70x220x250 (folded). Lens Dia30 in front plate. Hinged frosted glass focus plate at back. Mahogany cassettes 130x180. Rack and pinion focusing.

1126 (PSYKOLOG PL 16/1986).

Wheatstone's Temperament analyzers. Three.

Sign: Ant. Appunn / HANAU A/M

c1900 (g).

Sound producers. For testing of sound perception. Appun's model. Wood 760x200x180 on two wooden feet. Air inlet through brass tube Dia30 at the bottom. Top half of the box is a wind-chest with bellows. Under the wind-chest are 64 brass reeds. Wood handles open for air to the reeds.

(a) and (b) marked "TON MESSER", (c) marked "OBERTOENE".

Ref: Funch, p 42. See also Sotheby's

auction catalogue of the Wheatstone Laboratory Collection, 5 May 1989, lot 20.

1127 (PSYKOLOG PL 29/1986).

Sound key. Cattell's type.

Not signed.

c1900 (g).

Ebonite mouthpiece Dia50 for the patient to speak into, leading to a cone, minimum Dia25 maximum Dia120, the large end of which is covered by a membrane, originally of rubber or lambs skin. In the middle of this is a platinum contact, which opens and closes with the vibrations of the membrane. Operates on 4 volts DC. To be mounted on a stand.

Ref: Zimmermann, p 128.

1128 (PSYKOLOG PL 11/1986).

Distance estimation apparatus. Lehmann's type.

Signed: E. Zimmermann / Leipzig

c1900 (g).

White metal. A plate 80x50 with two lines marked A and B, has an opening 45x20 in which a plate with an index line can be moved along a millimetre-scale. The scale can be covered by a plate, and the purpose is for the patient to place the index line in the middle between A and B. Micrometer reading to 1/20 mm.

Ref: Zimmermann, p 9.

1129 (PSYKOLOG). Sound Pendulum.

Signed: E. Zimmermann / Leipzig / Emilienstrasse 21

c1900 (g).

To produce brief sound impressions. Wooden base 600x200 with a steel column Dia20-10, H300. On each side

is a steel quadrant, radius 300, graduated 0-90°, with wooden pendulums, ending in ebonite balls, falling against wooden blocks. Pendulum arms covered by cloth for sound isolation.

Ref: Zimmermann, p 132.

1130: (PSYKOLOG 151). Photometer. Flicker photometer.

Signed: SIMMANCE-ABADY / PATENT / 166H / FLICKER PHOTOMETER.

ALEXr WRIGHT & Co LTD / ENGINEERS / WESTMINSTER.S.W.

c1900 (g).

Mahogany box 105x90x105. A white ceramic wheel has alternating slanting periphery, which will produce a flicker when viewed in radial direction and rotated and illuminated by different types and/or intensities of light from opposite sides. Spring wound clockwork. Magnifier in brass tube Dia25 L65. Wooden box 170x160x170.

1131 (PSYKOLOG 152). ???

Signed: No 567 P / 2400 ohm.

EDELMANN MÜNCHEN / P.Brock & Co / København

c1900 (g).

Stainless steel 110x54x10. At one end a circular disk Dia55 with a micrometer. At the middle a circular inlay Dia11 with a glass covered central hole Dia3. One electrical terminal at each end. Fitted black box 205x80x70 lined with blue velvet.

1132 (PSYKOLOG 338). Typewriter.

Signed: YOST

c1900 (g).

84 keys. The types are placed in a circle, printing upwards against a plate to be

placed on two rails. Black keys for upper case letters, white for lower. Black laquered, gold paint. App 300x550.

1133 (PSYKOLOG). Organ.

Not signed.

Softwood. Windchamber 1150x240x300 with air connection and 23 outlets to which organ pipes may be connected. Pipes missing. Further information wanted; defective or unfinished.

1134 (PSYKOLOG 188). Transmission, stepless.

Signed on metal plaque: ALFRED ANDERSEN & O. SØRENSEN / Fysisk og mek. Etabl. / KØBENHAVN c1900 (g).

Wooden base 300x150. Iron frame 240x40x165 with two steel cones each L170 and max Dia40, min Dia22, with parallel axles. Leather belt runs around both cones, held tight by spring loaded pulleys, adjustable lengthwise by cranked screw.

1135 (PSYKOLOG). Resistor, variable.

Signed: CAMERON'S VITROHM POTENTIAL ADJUSTER / CAMERON'S SURGICAL SPECIALTY COMPANY / PATENT NO 1451678 CHICAGO USA.

c1900 (g).

To insert in lamp socket. Dia55. Overall L200.

1136 (PSYKOLOG 67). Amplifier tubes.

Signed: ACTIESELSKAB / F. Gottlieb Hansen / KØBENHAVN K

c1900 (g).

On cast aluminium case 84x58x54 con-

taining small transformer. Units may be connected in series by 4 mm plugs.

1137 (PSYKOLOG).

Gas analysis apparatus.

Signed on brass plaque: Vereinigte Fabriken für / Laboratoriumsbedarf / GmbH / Max Kaehler & Martini Dr Peters & Rost / Berlin N Chausseestr 3. Trade label: F.C. Jacob Glastechnische Værksteder / Hauserplads 14 / København K.

c1900 (g).

Glass tubes, cocks and small vessels mounted on vertical board 1050x350. Iron base 450x220. Not complete.

1138 (PSYKOLOG). Chronoscope.

Pendulum type.

Signed: E. ZIMMERMANN / LEIPZIG c1900 (g)

Two-armed pendulum L440 above the fulcrum and L700 below, made of iron with movable brass weights. Wooden frame 900x900. Arced scale along the path of the tip of the pendulum with electromagnets providing electric impulses at variable points. Holding electromagnet at one end and catching magnet at the other.

Ref: Zimmermann, p 122 ("Kontakt Pendel").

1139 (PSYKOLOG 113). Camera.

Signed: BUDTZ & MØLLERS EFTF / KØBENHAVN

c1900 (g).

Mahogany 410x450, opened L700, folded L170. Lens missing.

1140 (Weilbach). Deflector.

Signed: XXIV 628.

c1900 (g).

Frame 115x40 with two brass feet and one sprung foot. Vertical central support for top ends of two bar magnets; the lower ends have adjustable horizontal distance from the centre, thereby varying the inclination of the magnets. Horizontal scale 5-40 mm, on the screw is a micrometer to 0.1 mm. Overall H100.

1141 (WEILBACH). Deflector.

Clausen's Universal Deflector.

Not signed.

Made by Weillbach (inf), but identical instrument is shown as no 68a in Cornelius Knudsen catalogue.

c1920 (g).

Brass ring Dia130, scale 0-90-0-90°. Another ring slides inside this with an index to the scale. On a diameter of the inner ring is a scale 0-50 mm with two vertical bar magnets adjustable along the diameter by means of an arbor.

1142 (WEILBACH). Sun compass.

Not signed by maker.

Mid 20th century (g).

"Sonnenkompass Typ SK 54 System Stemmler-Koch". Black aluminium plate Dia120 with azimuth scale 0-360°. On two A-supports is mounted a dial Dia75, adjustable for declination and with two scales, 0-24 and 0-60. This dial is clock operated, spring wound clock and provided with a plastic alidade with two sights and cylindrical plastic cover.

Instructions for use.

1143 (WEILBACH). Deflector.

Signed: IVER C WEILBACH & CO /

SØLVER & SVARRER /

INSTRUMENTMAGER / AMALIEGADE 30 / KØBENHAVN

c1900 (g).

Brass base Dia60 with sprung central pivot; to be placed on ship's compass. Through the centre of the base is a L200 brass rod, probably as lubber's line. Above the base is a vertical brass cylinder with four grooves, along which a brass plate with two magnets can be moved up and down, and fixed in position by two set screws. The plate can be placed in the notches at 90° steps.

1144 (WEILBACH). Magnifying glass for compass.

Signed: Cornelius Knudsen København

c1900 (g).

Brass framed. Marked "C.Clausen's Constr". Semicircular glass Dia100. Sprung central pivot. Brass rod as lubber's line.

1145 (WEILBACH). Measure. Length.

Not signed by maker.

1910.

0.5 metres. Wood. Dia17.5-13. Marked crowned C5 and 1910.

1146 (WEILBACH). Azimuth mirror.

Thomson's.

Not signed.

Made by Weillbach (inf).

c1920 (g).

Prismatic. Oxidized brass. 200x60. Sprung central pivot. Shadow pin. Prism, magnifying glass, two shades. Spirit level.

1147 (WEILBACH). Range finder.

Signed: H. HUGHES & SON LTD / LONDON / No 10520

c1910.

Marked: "STUART'S MARINE / DISTANCE METER / PATT 498".

Telescopic reading.

1148 (WEILBACH). Sextant.

Signed, sextant: Iver C. Weilbach & Co
Kjöbenhavn

Signed, telescope: ARGUS STAR
c1900 (g).

Brass. Three-clover frame. Limb with silvered scale Rad185. Scale -5 to 135° in 15 min divisions; vernier to 1 min; clamp and tangential screw. Magnifier for reading. Three shades for alidade, three for horizon mirror. Reverse sighting. Mahogany handle. Telescopic sight Dia20 L80; pinhole sight same dimensions. Accessory: Binocular telescope L90 Objective Dia35, focusing by adjusting the objectives. Mahogany box 280x250x130 lined with green felt, fitted for both sextant and telescope.

1149 (WEILBACH). Bearing dial.

Signed: P.T. PELORUS / KELVIN &
HUGHES LTD / MADE IN GREAT
BRITAIN

c1920 (g).

Brass cylinder Dia170 H140, open below. Transparent compass card about 100 mm above the bottom. Divided 0-360° in 1° divisions. Marked N, E, S, W. Folding sights.

1150 (WEILBACH). Range finder.

Signed: WAYMOUTH-COOKE NAVAL
RANGE FINDER PAT No 1599/1914 /
T. COOKE & SONS LTD LONDON &
YORK / No 879 / MARK II.

c1914.

Circular brass dial Dia160 geared to optical system with prism L300. Scale 1200-18000 yards. Mast height adjustable 15-200 feet.

1151 (WEILBACH). Range finder.

Signed: RANGE FINDER. COTTON

TYPE MK II / E.R. WATTS & SON.

LONDON No 230.

c1920 (g).

Two prisms moving along a brass guide with range strips. Six strips are available for varying sighting levels 20-50 feet. Index mark on a prism indicates distance on the strip when two viewed images coincide. Overall L260. Brass scale L130 has "RANGE IN YDS" 200-3000 for sighting level 20 ft. Mahogany box 285x85x55.

1152 (WEILBACH). Telescope.

Refracting.

Not signed.

Late 19th century (g).

Leather bound brass tube Dia38 L430. Objective Dia32. Push fit focusing. Eye piece Dia30 L160.

1153 (WEILBACH). Mirror control instrument.

Signed: C. Plath Hamburg

c1900 (g).

Mahogany basis 500x135x35. A projector tube for external light source and a telescope point to a platform Dia50 at the centre of the instrument. The platform can rotate and an index points to one of two positions at right angles. The platform can be tilted by means of a micrometer screw.

1154 (WEILBACH). Compass.

Portable.

Signed: JOHAN PHILIP WEILBACH
K-HAVN

c1900 (g).

Dry compass in boxwood case Dia75. Push fit lid. One compass needle glued to the card, balanced with lumps of red lacquer. Black and white rose Dia55. 32 points, N and E ornamented.

1155 (WEILBACH). Compass.

Portable.

Signed: JOHAN PHILIP WEILBACH
K-HAVN

c1900 (g).

Brass Dia65 H35 with push fit lid. Dry compass under glass. 32-point rose, black on white. Also scale 0-90-0-90°.

1156 (WEILBACH). Compass.

Portable.

Signed: J.Ph.Weilbach / Kiöbenhavn
c1900 (g).

Brass Dia82 H30. Push fit lid. Dry compass under glass. 32-point rose with star at N. Engraved in the lid "G.P.D. No 23".

1157 (WEILBACH). Compass.

Portable.

Signed: Iver Jensen Borger / Kiöbenhavn
c1790.

Brass Dia50 H19. Push fit lid. Dry compass under glass. 32-point coloured card. Fleur de lys at N.

1158 (WEILBACH). Magnet.

Not signed.

Late 19th century (g).

U-shaped iron in wooden fitting. Suspension ring and yoke. Overall H220 W75.

1159 (WEILBACH). Hygrometer.

Wet and dry bulb.

Thermometer signed: H.Struers chemiske Laboratorium, København-Aarhus. c1900 (g).

Wooden frame 330x80x60. Glass bowl for water. Thermometer scales -5 to 25° in 0.5° divisions. Table for reading RH.

1160 (WEILBACH). Barometer, altitude meter.

Signed: F.A.THIELE / KJØBENHAVN
c1860 (g).

Portable in the shape of a watch. Tom-bac (?) case Dia54 H20. Silvered scale 50-78 (likely cm Hg) and 0-5000 (feet?). The altitude scale adjustable against the barometer scale. Level zero at 76 gives level 5000 at 52.1.

1161 (WEILBACH). Sand glass.

Not signed.

c1900 (g).

15 min. Boxwood base 305x38x15 pivoting on another boxwood plate of same size for wall mounting.

1162 (WEILBACH). Compass.

Signed: IVER C. WEILBACH & CO / SØLVER & SVARRER / AMALIEGADE 30 COPENHAGEN.

c1900 (g).

Brass bowl Dia260. Gimbal mounted. Dry compass card, 128 points, 0-360°, marked "THE LORD KELVIN COMPASS CARD"; suspended in silk cords.

1163 (WEILBACH). Slide rule.

Signed: A.G.THORNTON Ltd MADE IN ENGLAND

c1915 (g).

Speed-time-distance slide rule. Scales for time, sea miles and speed.

1164 (WEILBACH). Clinometer.

Signed: Iver C.Weilbach & Co A/S / Copenhagen Denmark.

c1950 (g).

Nickel plated brass house Dia110 H26. Weight behind the scale and the index before. Scale 50-0-50°.

1165 (WEILBACH). Sextant.

Not signed.

Trade label: Lauritz Kirkeby / Willum Petersen's Efterfølger / Den kgl Marines Instrumentmager. Uhr- og Chronometermager / Etableret 1841 / Laxegade 26 Kjøbenhavn
Mid 19th century (g).

Brass. Frame Rad200. Ebonized handle. Three feet. Silvered scale -5 to 120° in 15 min divisions; vernier to 15 sec. Clamp and tangential screw. Magnifier. Sighting telescope Dia20 L75; pinhole sight same dimension. Four filters for index mirror, three for horizon mirror. Shaped mahogany box.

1166 (WEILBACH). Rule. Rolling parallel.

Signed: U.W.W. / MAKERS / BIRMINGHAM

c1900 (g).

Brass 456x60x3. Bevelled drawing edges. Brass rollers.

1167 (WEILBACH). Hydrometer.

Signed on inlaid paper scale: Iver C.Weilbach & Co. Sp.Gew.1031 Tp 15 C 30 29 28 27 26 25 1024

c1900 (g).

Glass. Dia30. Float L170. Shot weighted bulb. Stem L130 with inlaid paper scale. Cardboard case Dia33 L360.

1168 (WEILBACH). Depth sounder.

"Sigurdssons Depth Recorder".

Signed: Sigurdssons Depth Recorder / Improved pattern / Iver C.Weilbach & Co A/S / Sølv & Svarrer / Amaliegade 30 -Copenhagen

c1900 (g).

Celluloid gauge tube mounted in brass casing L495. Pressure gauge type;

depth is measured by the the amount of water having entered the gauge tube. Scale in metres or fathoms. Softwood box 560x125x75. Instructions on label, glued to the lid.

1169 (WEILBACH). Chronometer.

Signed: GUB / GLASHÜTTE / SA. / veb GLASHÜTTE UHRENBETRIEBE / 7603.

c1950 (g).

Teak case 185x185x190 with glass lid. Gimballed Dial15. Winding key. Scale I-XII and 0-60 sec. Winding indicator 56-0.

1170 (WEILBACH). Chronometer.

Signed: Thomas Mercer / 25655 / THOMAS MERCER LTD. ST ALBANS ENGLAND.

c1880 (g).

Teak case 185x190x175. Gimballed. Winding key. Silvered scale I-XII and 0-60. Winding indicator 56-0. Label in the case "Carl Aug.Olsen & Sønn / DANMARKSPASS".

1171 (WEILBACH). Chronometer.

Signed: IVER C. WEILBACH & Co / København No 89.

c1860 (g).

Teak case 185x190x200. Glass lid and wooden lid. Gimballed. Silvered dial Dial15; scale I-XII and small scale 0-60. Winding indicator 56-0.

1172. (WEILBACH). Magnets.

Signed on the brass: IOHANN PHILIP WEILBACH / i KIØBENHAVN

c1840 (g).

Two bar magnets for magnetizing compass needles. Brass tubes Dia50 L330 containing the magnets. Fitted oak box with glass lid.

1173 (WEILBACH). Quintant.
Signed: C. PLATH HAMBURG
c1880 (g).

Oxidized brass lattice frame with limb Rad180. Silvered scale -5 to 152° in 10 min divisions. Vernier to 10 sec. Tangential screw, may be disengaged from the rack. Two telescopes and one pinhole sight. Filters for index and horizon mirrors. Wooden box 290x290x140.

1174 (WEILBACH). Depth sounder.
Waywiser type.
Signed: Made by / Thos. Walker & Son Ltd / Birmingham, Engl.
c1860 (g).

"WALKER'S HARPOON SOUNDING MACHINE". Brass spinning wheel and counter mounted on oval iron plate, 230x125. Counter: 0-30 and 0-150.

1175 (WEILBACH). Depth sounder.
Waywiser type.
Signed: Made in England by / Thos. Walker & Son, Ltd / 58 Oxford St. Birmingham.
c1860 (g).

"Walker's Harpoon II Depth Finder". Brass, oval base plate 165x80. White enamel counter scale. Marked: T8097.

1176 (WEILBACH). Artificial Horizon.
Not signed.
Mid to late 19th century (g).
Cylindrical brass case Dia140 H30 with lid. Metal mirror Dia135. Threaded socket for staff mounting.

1177 (WEILBACH). Compass.
Signed: P. Weibach
c1880 (g).
Mahogany case 285x285. Gimbal mounted bowl Dia210. Dry card, print

black on white. With adjusting bar magnet. Domed glass cover.

1178 (WEILBACH). Compass.
Azimuth.
Signed: IVER WEILBACH KIÖBENHAVN
c1900 (g).

Slit and wire sights. Wooden case 325x325. Brass bowl in gimbals; lubber's line on the glass; prism for reading. 64 point card, 0-90-0-90°.

1179 (WEILBACH). Compass.
1984
Ornamental. Test piece for apprentice John Philip Weibach.

1180 (RØMERMUS 1/1983). Transit instrument.
Signed: E. JÜNGER / KIØBENHAVN / 1872
1872.

Brass. Tube Dia163, focal length 2630 mm. Knorre's declinograph. Made for the Observatory in Copenhagen.
Ref: Thykier, vol 2 p 200.

1181 (RØMERMUS 4/1983).
Hygrometer. Saussure's hair type.
Signed: Prof Smith's Etablissem.
KHAVN.
c1820 (g).

Brass frame 332x90. Micrometer for zero adjusting. Arresting mechanism for transport. Silvered scale 0-10 ("TØRT-FUGTIGT"). Thermometer missing. Ring for suspension.

1182 (RØMERMUS 2/1983). Circle.
Surveying. Ekström's.
Signed: Joh. Ahl Kiöbenh. forbedret af J. Bidstrup Ao 1802

c1762. Improved by Jesper Bidstrup 1802.

Brass. Dia495 with four spokes. Two telescopes L620, one with spirit level, the other with alidade. Scale four times 90° with vernier. Vertical or horizontal mounting. Heavy wooden stand, not original with this instrument.

1183 (RØMERMUS 9/1984).

Telescope. Terrestrial.

Signed: Cornelius Knudsen København

Wooden tube Dia49. Two draw tubes Dia38 and Dia29. Minimum L280 maximum L690. Dustcover at objective.

1184 (RØMERMUS 16/1984).

Diptych.

Signed: MF'D BY THE ANSONIA
CLOCK CO NY USA PATENT
SUNWATCH PENDING

c1900 (g).

Sheet metal. about 65x45. Compass Dia18. Hinged gnomon. Inside the lid is a list of 42 American towns with latitudes, longitudes and variations. Correction list for Sun time / Local time.

1185 (RØMERMUS 17/1984).

Diptych.

Japanese (?). Wood. Not measured. Compass with cord gnomon (not original). Many (Japanese) signs, not interpreted. Volvelle with many signs on the lid.

1186 (RØMERMUS 18abcd/1984):

Telescope. Refracting.

Signed: G & S MERZ IN MÜNCHEN
c1900 (g).

Mahogany tube, brass bound. L2350. Focal L2100. H1420. Fine adjusting of

declination. Iron tripod. Has belonged to Jens Olsen (1871-1945), instrument- and clockmaker.

1187 (RØMERMUS 1/1987).

Telescope. Refracting.

Signed on clock: KGL HOF-INSTRM /
Cornelius Knudsens Etb / Nautisk Af-
deling. København

Early 20th century (g).

Equatoreal mount with clock. Objective Dia80. Focus L1270. Overall H2050 with tripod.

1188 (RØMERMUS 5/1983). Sundial.

Signed: L. Schou Will. Nielsen fecit /
MDCCCLVI

1856.

Wooden cross, hinged at the foot, to be elevated to 56° 0' 25" northern latitude and supported by mahogany strut. 15 dials drawn on papers and stuck on all sides of the cross. L417 W313 H102. Calculated by P.W.Tegner.

1189 (HAUCHCOL 36, AWH A42).

Percussion table or ballistic pendulum.

Not signed.

c1790 (g).

Mahogany. Table 668x475. Mahogany feet H156 with wooden level screws. Two curved uprights hold wooden bars L267 connected at right angles H500 above the table. Each bar has a slot parallel with slots in the table below. Vertical axles of two lyre-shaped frames may be adjusted along these slots and secured by knurled nuts. Two pendulums (one is a reproduction) L395 with cylindrical heads Dia35 L40 can swing along the frames to hit an ivory ball (missing) in the corner at the table below. The angle and force of the impact

on the ball may thus be varied.

Ref: Nollet, II 24.

1190 (SORØAKAD 198).

Sympiesometer.

Signed: Julius Nissen / Kiöbenhavn

c1860 (g).

Glass tube with clear fluid L440; air bulb above. Mercury thermometer in red glass L315. Silvered scale divided 26-30 in 1/12 divisions (Danish inches). Sliding scale along temperature scale. Rotatable memory pointer. Mahogany case 550x80x35 with glass front.

1191 (HAUCHCOL 222, AWH G3).

Air pump. Vacuum.

Signed on bone plaque on the yoke by the single barrel: NAIRNE / Optician to His Majesty / No 20 Cornhill / LONDON

Signed on bone plaque on the yoke by the double barrel: NAIRNE / Mathematical and Philosophical / Instrument Maker / LONDON
c1790 (g).

"Smeatons improved air pump". Three brass barrels 12 inches long. Two barrels simultaneously operated by one handle. Rack and pinion. Grease lubrication. Two vacuum gauges, one long cistern type, the other closed U-tube. Mahogany mounting table 690x430x550 with column for supporting the glass plate and bell jar. Overall H1020 to plate. Text for valve operation in Danish.

1192 (HAUCHCOL 221, AWH G1).

Air pump. Vacuum.

Not signed (certainly French).

c1890 (g).

Hauch's inventory states "of Duke of Chanlieu's physical Cabinet". One barrel 3 inch diameter 15 inches high. Glass plate 10 inches diameter. Mahogany framing. Overall H1230 (to the plate). Text for valve operation French.

1193 (HAUCHCOL 220, AWH G5).

Air pump. Vacuum.

Not signed.

c1800 (g).

Brass. Portable, for fastening to the table. Brass barrel Dia35 L100. One crank operates two racks with the centrally mounted piston. Glass plate Dia100. Brass bracket for securing the pump by clamp. Overall L230.

1194 (HAUCHCOL 226, AWH G38).

Magdeburg hemispheres.

Not signed.

c1800 (g).

Dial20. Brass with brass handles.

1195 (HAUCHCOL 227, AWH G52).

Propeller.

Not signed.

c1800 (g).

Brass. Demonstration of air friction. Six clover shaped blades rotating on horizontal axis. Circular brass base Dia65. Overall H125.

1196 (DANMTEKN LTF 487).

Voltmeter.

Signed: WESTON ELECTRICAL CO
1910 (acquired).

Laboratory Standard with integral compensation using standard element. Sector shaped non-magnetic metal house. Mirror scale 0-150 with transversals. Mounted in mahogany case 400x350x130 incl lid. Integral resistanc-

ce coils with shorting plugs (20,50,150 ohm). Integral thermometer 10-40°.

1197 (DANMTEKN LTF 317 and 516).

Precision watt-meter. Two.

Signed: Präcisions – Wattmeter / Max 10 Amp / Patent / SIEMENS & HALSKE.

c1900 (g).

Mahogany case with oblong window to scale 0-150. Mirror reading. Resistance coils with shorting plugs for 5 and 10 amp range. Switching 30, 150, 300 volts. For AC and DC. Fabr no 757123 and 248801.

1198 (DANMTEKN LTF 517).

Precision ammeter.

Signed: Präcisions – Amperemeter / für / Gleich- und Wechselstrom / Siemens & Halske

1909 (acquired).

Mahogany case 300x250x170 with arched top. Two ranges, 5 and 10 amp. For AC and DC. Lead sealed SH trade mark. Oak box 370x295x230; the instrument slides in from the end.

1199 (DANMTEKN LTF 575).

Millivoltmeter.

Signed: WESTON INSTRUMENT CO / BERLIN / No 1132

1907 (acquired).

Oak case 175x160x80. Mirrored scale 0-150. Max current 30 mA.

1200 (DANMTEKN LTF 162).

Ammeter.

Signed: HM (trade mark).

Made by Helweg Mikkelsen, Copenhagen.

1932 (acquired).

Sheet iron house Dia200 H100. For wall

mounting. Eccentric index. Scale 0-15 A.

1201 (DANMTEKN LTF 438).

Ammeter.

Signed: Elektrizitäts-Gesellschaft / Gebr.Ruhstrat, Göttingen.

c1925 (g).

Oak case 200x200x95. Mirror scale L140, glazed, 0-2 and 0-10 A.

1202 (DANMTEKN LTF 503).

Voltmeter.

Signed: WESTON ELECTRICAL INSTRUMENT Co / NEWARK N.J.

USA / Model 45, No 6875.

c1900 (g).

Oak case 200x200x110. Iron house. Ranges: 0-3, 75, 150, 300 with separate terminals. Scale L120. Patents 1888 to 1898.

1203 (DANMTEKN LTF 104) Electrical standards.

Fairly large collection of electrochemical cells supplied by e.g: Sangamo Weston Ltd; Physikalisch-Technische Reichanstalt; Fritz Köhler, Leipzig; Kofoed-Meyer Ingeniørforr. Copenhagen; F.A.Thiele, Copenhagen.

1204 (DANMTEKN LTF 3018).

Galvanometer. Astatic.

Signed: LEEDS & NORTHRUP Co / PHILADELPHIA / 631588

1949 (acquired).

Two coils with mirror between. Zero adjustment. Ebonite house 95x40x220, mounted on mahogany case 180x275x82. Leeds and Northrup cat no 2440.

1205 (DANMTEKN LTF 514).

Galvanometer. Mirror.

Signed: SIEMENS & HALSKE / No 182820

1908 (acquired).

Brass house 80x33x90. Suspension tube Dia16 H220. Ebonite base Dia145. Three levelling feet. There are a number of this type of instrument.

1206 (DANMTEKN LTF 3012).

Galvanometer. Mirror.

Signed: LEEDS & NORTHRUP CO / PHILADELPHIA PA No 728263 c1946 (catalogue).

Ebonite house Dia65. Base Dia130. Suspension tube H215. Three levelling feet.

Leeds and Northrup cat no 2284 C Type HS. Danish agent: Kofoed-Meyer, Ingeniørforretning, Copenhagen.

1207 (DANMTEKN LTF 113).

Galvanometer. Moving coil.

Signed: N.C.Jensen / København 1941 (acquired).

Mirror. Wooden case 300x133x60. Red U-magnet 120x60. Suspension wire L200. Wooden base 350x172. Collection of at least seven galvanometers. N.C.Jensen (1890-1968) was assistant at the Physics Laboratory at the Polytechnical University, Copenhagen, and ran his own workshop, where he produced instruments for use by the student's experiments.

1208 (DANMTEKN LTF 549).

Galvanometer. Thermal, Duddell type.

Signed: THE CAMBRIDGE / SCIENTIFIC INSTRUMENT CO LTD / CAMBRIDGE ENGLAND / No 8202 / DUDDEL'S PATENT / UK 17642 1900 1909 (acquired).

Bismuth-Antimony thermocouple with

single silver wire coil. The current to be measured is taken through a heater wire, close to the thermocouple. Brass base Dia220 with three levelling feet. U-magnet 135x70x30. Brass house with circular window for mirror. Cylindrical brass cover Dia125 H290 secured by three knurled nuts. Spare heaters in mahogany box 170x60x42.

1209 (DANMTEKN LTF 367).

Galvanometer. Ayrton-Mather moving coil type. Signed: AYRTON-MATHER

GALVANOMETER / PAT No 4276, 1892 / HATTON GARDEN, LONDON / R.W.PAUL, MAKER

c1900 (g).

Mirror. Brass base Dia175. Brass cylindrical house Dia130 H150. Suspension tube Dia30 H110. Spirit level. Circular magnet. The moving coil assembly is missing.

1210 (DANMTEKN). Shunt. Universal for use with galvanometers.

Signed: N.C.Jensen / København / Nr 6028

c1940 (g).

Lacquered sheet iron case 160x-160x150. Bakelite lid. Adjustments: 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, 10000. No units given.

1211 (DANMTEKN LTF 3081,3082).

Calculating machines. Two.

Signed: ORIGINAL-ODHNERA/S / AALBORG KØBENHAVN

1956 (acquired).

For multiplication and division. 290x-180x140.

1212 (DANMTEKN LTF 3165).

Calculating machine.

Signed: BRUNSVIGA / MASCHINE-
NWERKE AG / BRAUNSCHWEIG /
FABR Nr 30305 MODEL 20

1957 (acquired, under Marshall aid
programme).

For multiplication and division. 350x-
230x170.

1213 (DANMTEKN LTF 3457).

Recorder. Electronic. Multipoint.

Signed: LEEDS & NORTHRUP
SPEEDOMAX G SER No 802522

1951 (acquired).

16 channels, 4 sec per channel. 10 inch
strip chart; paper speed 1-190 cm per
hour. Ranges 0 - 2.5; 5; 7.5; 15 mV.

Case ca 450x550x400.

1214 (DANMTEKN LTF 3583).

Tachometer.

Signed: JAQUET / No K 505772 /

Made in Switzerland

c1920 (g).

Scale Dia80 divided 3-12 and 10-40.
Ranges 30-120, 100-400, 300-1200,
1000-4000 and 3000-12000 rpm. Acces-
sories: axle extension, friction disc,
three different axle prongs. Black fishs-
kin box lined with blue velvet 170x110
x80.

1215 (DANMTEKN LTF 856).

Tachometer.

Not signed.

1920 (acquired).

Black lacquered housing. Scale Dia60
divided 3-12 and 10-40. Ranges adju-
stable, rpm.

1216 (DANMTEKN LTF 3086, 3219).

Calculating machines. Two.

Signed: Model SBT / FRIDEN EC 130
/ FABRR 925116 / HOLLAND

1963 (acquired).

Electric. Add, subt, mult and div.
480x370x230.

1217 (DANMTEKN LTF 47).

Resistance box.

Signed: N.C.JENSEN / KØBENHAVN
c1930 (g).

Dial type. Four decades. 1-10000 Ω s.
Mahogany case 500x160x120 with ebo-
nite lid. A number of these are on
hand.

1218 (DANMTEKN LTF 148,149).

Resistances. Standard. Two.

Signed: O.Wolff Berlin / 5221 (and
5222)

1913 (acquired).

Manganine in brass house Dia45 H130.

Ebonite top. Marked "N.B.S. MODEL"
(?). Correct to 0.01 per cent.

1219 (DANMTEKN LTF 3376).

Resistance. Standard.

Signed: N.C.JENSEN / KØBENHAVN
c1950 (g).

Marked: "1 abs OHM / 20°C". Grey lac-
quered case 125x125x65. Collection of
about 20.

1220 (DANMTEKN LTF 607).

Resistance boxes.

Signed: N.C.JENSEN COPENHAGEN
c1950 (g).

Wooden cases about 220x90x100. Ebo-
nite top, brass terminals. Ranges 1-4, 1-
1000 and 1-10000 Ω . Large collection,
which has been used for student's expe-
riments.

1221 (DANMTEKN LTF 375, 213).

Capacitors. Mica. Two.

Signed: SIEMENS & HALSKE /
077170 (and 6230).

1900 (acquired).

Mahogany case 210x170x120 with ebonite top. Sealed and filled with wax. Brass contacts with plugs.

1222 (DANMTEKN LTF 3071).

Capacitor. Variable plate, air.

Signed: N.C.JENSEN

1962 (acquired).

Range 50-1100 mF. Lacquered case 65x65x75 with ebonite top.

1223 (DANMTEKN LTF 220).

Capacitor. 1 MFD.

Signed: ELLIOTT BROS LONDON

c1900 (g).

Mahogany case 190x165x40 with ebonite top and brass terminals. Interior of case is sealed and filled with wax.

1224 (DANMTEKN LTF 510).

Wheatstone's bridge.

Signed: SIEMENS & HALSKE / Man-
ganin / 195975

1909 (acquired).

Mahogany case 380x200x150 with ebonite cover and brass conductors with plug-in connectors. Maximum load 2 W, maximum 50 V.

1225 (DANMTEKN LTF 332).

Inductor. Variable.

Signed: Robt.W.Paul, London N No
7866

1912 (acquired).

-1 to 105 μ H. Wooden case 360x-
250x160. Two-position switches, 0-1000
and 0-10000. Marked: "CAMPBELL
ADJUSTABLE MUTUAL INDUCTAN-
CE"

1226 (DANMTEKN 3249).

Resistance box.

Signed: N.C.JENSEN

c1950 (g).

0.1 to 1111 Ω . Oak case 400x220x70. Ebonite top. Brass conductors and plugs.

1227 (DANMTEKN LTF 218).

Westphal specific gravity balance.

Signed: G.WESTPHAL CELLE

c1870 (fl).

Brass base Dia60. Overall H220. Mercury loaded sinker. Riders. Wooden box, fitted, 220x165x80 with sliding lid.

1228 (DANMTEKN LTF 3051).

Anemometer. Thermo.

Signed: ILLINOIS TESTING LABO-
RATORIES / "ALNOR" THERMO
ANEMOMETER / TYPE 8500 FABR
NO 357

Danish Agent: Chr.Hjelm Bang,
Copenhagen

1953 (calibration stamp).

Probe L280 with electrically heated
wire to hold in the wind. Wooden case
with battery, adjustments and indicator
225x185x125.

1229 (DANMTEKN LTF 205). Balance.
Chemical.

Not signed.

c1850 (g).

Beam L320. Brass pillar Dia50-25 H300.
Brass pans Dia320. Mahogany case with
glass panels 580x270x560.

1230 (DANMTEKN LTF 3262).

Refractometer. Abbe's type.

Signed: R.FUESS /

BERLIN-STEGLITZ / Nr D6523

1964 (acquired).

Hemisphere of flintglass. Overall
H325.

1231 (DANMTEKN LTF 3251).

Microscope. Polarizing.

Signed: JENA / 416400

Made by: Carl Zeiss 1964 (acquired).

Objective marked 691587 / PLANA-CHROMAT 6,3/0,16/160/-/POL.

1232 (DANMTEKN LTF 3280).

Refractometer. Abbe's type.

Signed: JENA / 234553

1964 (acquired).

Cf item 1230.

1233 (DANMTEKN FS 80M). Gyro. Set.

Signed: J. NISSEN

c1860 (g).

(a) Brass gyro Dia100 13 mm thick in circular steel frame Dia130; (b) same, mounted on a brass bar L250; (c) same, mounted hidden in a sheet iron sphere; (d) point for supporting gyro; (e) gyro gimbal mounted. Iron foot Dia180. Some of the parts are no doubt replaced.

1234 (DANMTEKN FS 867).

Water level.

Not signed (probably Danish).

Late 19th century (g).

Cast iron. Black painted. Two levels at right angles. 200x45x35.

1235 (DANMTEKN FS 4A).

Pantograph.

Not signed.

c1800 (g).

Brass. Weight Dia75. Bars L230, L130, L100, L200, L240. Holes for connections of the bars are numbered 3-8. Shaped black leather case with red lining L350.

1236 (DANMTEKN 306).

Proportional compass. Two.

Made by: O. Richter, Chemnitz.

Trade label: Corn. Knudsen

c1920 (g).

(a) Brass with triangular cross section steel points, L180. Not signed; (b) same, steel with semicircular cross section points. Black fishskin box 220x40x25.

1237 (DANMTEKN FS 58M).

Expansion apparatus (?).

Signed: THE CAMBRIDGE SCIENTIFIC INSTRUMENT Co Ltd / CAMBRIDGE ENGLAND / No4842

c1910 (g).

Steel bar Dia4 L170 has a brass ring at both ends, one of which can be screwed more or less into the bar. A scale, as vernier to 1/50 millimetres can be moved along the bar. The use is not known.

1238 (DANMTEKN FS 40M).

Rotating mirror.

Signed: E. JÜNGER KJÖBENHAVN

c1860 (fl).

Polished metal 29x15x15 rotated by a crank and gear mechanism. The gear mechanism mounted between two brass plates 200x195x155x195 (trapeze shaped). Gear ratio 1:470.

1239 (DANMTEKN FS 19M). Balance.

Hydrostatic.

Not signed.

c1800 (g).

Brass base 185x185 with four levelling screws. Brass pillar Dia28 H550. Steel beam L445 with rectangular cut-outs at ends. S-pivots pan suspensions. Brass pans Dia90. Steel index L90, scale -5 to 0 to +5 arbitrary. Lifting of balance by rack and pinion.

1240 (DANMTEKN FS 57M). Torsion apparatus.

Signed: THE CAMBRIDGE SCIENTIFIC INSTRUMENT CO LTD / CAMBRIDGE ENGLAND No 7035

1909 (acquired).

Iron tripod with three levelling screws. Vertical iron rod supports a L720 wire of which the torsions index is to be measured. A brass cylinder Dia50 at the lower end of the wire can be turned by two cords, over two pulleys carrying weights. An index on the cylinder indicates the angle on a white scale 0-360°.

1241 (DANMTEKN).

Dilatation apparatus.

Not signed.

c1850 (g).

Wooden base 400x95 with wooden pillar, turned in the form of a classical column H360 supporting a brass scale. An index with pivot at the foot of the pillar is pushed by the expanding metal bar, heated by spirit flames. This is the "pyrometer" invented by Musschenbroek c1730. The specimen is fixed at one end, the other end bears against the short end of the index close to the pivot, thus multiplying the indication by the proportion between lengths of the index arms.

1242 (DANMTEKN FS 90M).

Aneroid barometer.

For demonstration.

Signed: H.E.Holst.

c1870 (g).

Mahogany base Dia165. Brass base plate. White metal single bellows with brass balancing spring. Covered by glass dome Dia120.

1243 (DANMTEKN FS 428).

Adhesion plates.

Not signed.

Early 19th century (g).

Two ground glass plates Dia65 in circular brass frame diametrical brass bar and central suspension hook. Brass stand with triangular base and three pillars joining at the top with hook for suspension. Overall H200.

1244 (DANMTEKN FS 182M).

Celestial globe.

Not signed.

c1900 (g).

Glass sphere. Educational, no stars marked. Dia~300. Marked with equator, tropics, polar circles, meridian and ecliptic. Adjustable latitude 0-90°. Mounted in brass quadrant. Wooden base Dia135. At the centre is an earth globe Dia~15 on a pole-to-pole diameter.

1245 (DANMTEKN FS 14V).

Hygrometer.

Signed on temperature scale: J.Nissens Efterfølger

c1880 (g).

Wet and dry mercury in glass thermometers L400; brass fitting with suspension ring; scale -36 to +40° C. Wooden base 200x130 with four levelling screws; wooden pillar H580.

1246 (DANMTEKN). Globe.

Not signed (probably Danish).

c1900 (g).

Black for drawing with chalk. Dia~320. Wooden base Dia150 with three baluster turned feet as radii, ending in wooden spheres Dia53. Brass meridian 90-0-90°. Mounted at latitude about 67°. Hour scale at North pole.

1247 (DANMTEKN FS 99M).

Hydrometers. Set of two.

Signed: J.Nissens Efterfølger.

c1880 (g).

Glass with integral thermometers. (a) L360, scale marked "Spec Vægt 1.000 til 2.000 / B 0 til 70 / TL -15 til 0 FP til 100° Celcius". Also marked: "Normal Aræometer efter Beaume & spec Vægt for Fluiden tungere end Vand. Temp 17° C^ls. J.Nissens Efterfølger". (b) L375. Scale marked "Sp Vægt 1.000 til 0.700. Beaume: 10 til 80. Celcius: -10 til 0 FP til 45° Celcius". Also marked: "Normal Aræometer efter Beaume & spec Vægt for Fluiden lettere end Vand. Temp 15° C^ls. J.Nissens Efterfølger Kjöbenhavn". Fitted black fishskin box with velvet lining. 400x55x30.

1248 (DANMTEKN). Hydrometer.

Alcoholmeter.

Signed: Alkoholmeter efter Spendrup & Tralles Temp 9° R^f Cornelius Knudsen Kjöbenhavn.

c1900 (g).

Glass L415 with thermometer inside the float, scale -4 to + 30°R. Marked "Spendrups Correctionsscala". Scales marked "Sp. 0-17" and "T 0-100". Glass beaker Dia35-48 H485 on brass base Dia37. Black fishskin box lined with suède 520x80x50.

1249 (DANMTEKN FS 101M).

Hydrometer.

Signed: Brændeviins-Prøve af C.G.Scheutz i Kjöbh / Polytech.

L.Anstalt No 26 H.P.

Late 19th century (g).

Glass. Alcoholmeter. Sphere Dia18 with shots. Float Dia30. Stem Dia6.5 L165. Brown fishskin box 275x45x30 lined with green velvet.

1250 (DANMTEKN). Pyknometer.

Signed on the thermometer scale:

verf.v.Ch.F.Geissler in Berlin

Mid 19th century (g).

With thermometer. Glass. Vial Dia32 H110 with glass neck graduated 0-24 cm. Thermometer L325, scale -4.5 to 42.5° Celcius with ground glass stopper. Fitted black fishskin (?) box 450x60x35 lined with brown velvet.

1251 (DANMTEKN). Hydrometers.

Collection of ten. Tralles's type.

Mid to late 19th century (g).

(a) Three: "ALKOHOLMETER nach Richter u. Tralles, Ch.F.Geissler, Berlin".

(b) "Alkoholmeter nach Richter u. Tralles, F.A.Greiner u.A.Berlin".

(c) Three: "Akademie der Wissenschaften geprüft. Tralles. K.Bayer".

(d) "Alkoholmeter nach Tralles. Jeder Grad zeigt pro Cent in 100 Theilen des Masses bei einer Temperatur von 12½ Reaumur von I.C.Greiner sen. et Comp".

(e) Two: "ALKOHOLMETER nach Richter u. Tralles verf von Doctor Fried Adolph Greiner Firma F A Greiner u Co in Berlin".

1252 (DANMTEKN FS 39L).

Refraction apparatus.

Not signed.

Mid 19th century (g).

Two equilateral prisms and lens. Quartz. Mounted on expandable brass stand, base Dia130, pillar H250. Inner pillar slide up and down with bracket for lens and prisms, and is held in position by knurled nut clamp.

1253 (DANMTEKN).

Conical glass lens.

Not signed.

Mid 19th century (g).

Dia48. H45. Mounted in black frame

Dia120. Expandable pillar H485-365 fixed in position by knurled nut clamp.

1254 (DANMTEKN). Stands. Two.

Not signed.

c1800 (g).

Cork lined boxwood jaws L280 and boxwood universal joint. Expandable brass pillar on tripod foot.

1255 (DANMTEKN FS 162M). Siren.

Signed: Pixii Père et Fils / Rue de Grenell St Germain 18 / à Paris

c1830 (g).

Brass. Cylindrical windchest, with conical connection to air stream below. Steel axle to revolution counter above with two dials. Overall H160 W65.

1256 (DANMTEKN). Tuning forks.

Two.

Signed: MAX KOHL A.G. / CHEMNITZ / (1.8) 2.2 VOLT 1 AMP.

c1927 (catalogue)

Electromagnetic. Mahogany base; coil between the legs. Steel mirror and weight screwed to the ends of the legs. L380 (128 Hz) and L500 (64 Hz).

Ref: Kohl II, p 363, cat no 88427.

1257 (DANMTEKN). Organ model.

Not signed.

Early to mid 19th century (g).

Wood. Frame 800x300 with keyboard, eight white keys, five black keys are fakes. Wind chest, lined with suede. Three pipes missing.

1258 (DANMTEKN). Sprinkler for lycopodium powder.

Not signed.

Early to mid 19th century (g).

Boxwood. Turned to resemble a greek vase. Max Dia46 H103.

1259 (DANMTEKN FS 501).

Resonators. Seven.

Not signed.

Late 19th century (g).

Brass. Cylinders with spherical top. Marked: Fa4, Re4, La#3, Mi3, Ut3, La2, Si1 (?).

1260 (DANMTEKN FS 76M).

Gyro with six leaf springs for resonance.

Not signed.

c1900 (g).

Brass rotator Dia60, in brass ring. Overall L200. Box 230x95x80 covered with linen, lined with blue velvet.

1261 (DANMTEKN FS 478). Compass.

Not signed.

c1900 (g).

Apparently a replica of Ørsted's compass. Wood base Dia175, baluster turned to H125. Brass compass Dia60. Brass scale 0-90-0-90°.

1262 (DANMTEKN). Galvanometer.

Tangent.

Not signed.

c1900 (g).

Boxwood tripod with brass levelling screws. Circular copper conductor Dia200. Brass compass Dia165. Scale 0-90-0-90°. Long copper wire parallel connections L500. Overall H330.

1263 (DANMTEKN FS 241E).

Dipping needle.

Signed: Gambey à Paris

c1840 (g).

Mahogany case with glass panels at front and back. 330x75x310. Brass base with three levelling screws. The case is mounted on brass ring with silvered circular scale 0-360° in 0.5° divisions; vernier to 1 min. Spirit level inside the case. Vertical brass ring with scale 0-90-0-90° in 1/6° divisions; 0 vertical. Two magnifying glasses for reading inclination.

1264 (DANMTEKN FS 483).

Lodestone.

Not signed.

Mid 19th century (g).

Brass bound, suspended in wooden frame and with iron yoke and lead weight. Wooden stand 280x215x470.

1265 (HAUCHCOL 1080, AWH D15).

Filter glass.

Not signed (probably from Holland).

c1800 (g).

Top glass is funnel shaped H260 with ground stopper for insertion in lower flask; glass lid Dia265 with glass knob; sheet iron rack supports 21 glass staves L200, on which filter paper can be placed. Lower flask for receiving filtrate maximum Dia280 H255.

Ref: Hauch, vol 2 p 20, pl 6 fig 10 and 11.

1266 (HAUCHCOL, AWH D8).

Gas holder.

Signed, brass plaque on the table:

Onderdewyngaart Canzius. Delft.

c1800 (g).

Glass, brass base Dia320 H590. Brass top with funnel and connections to

tubing, brass level scale along the side. Mahogany table 400x405x750. Adjacent cylindrical tube Dia100 H1280 to act as siphon.

Ref: Van Marum, p 250 fig 171.

1267 (HAUCHCOL, AWH D8).

Combustion chamber. Two.

Not signed (probably from Holland).

c1800 (g).

Spherical glass Dia300, brass fitting at the top for connection to tubing. Brass stopcocks. Electrical connection for ignition. A silver tube Dia~8 is inserted down into the sphere, the end turned up and with a tiny opening, presumably for admitting hydrogen. The glass is supported on a brass stand with three brass rods a feet.

Ref: Van Marum, p 248 fig 165.

1268 (HAUCHCOL). Funnel. Three.

Not signed (probably from Holland).

c1800 (g).

Glass with brass neck with stopcock and spout. For placing on iron stand for admitting controlled amounts of fluid. Max Dia270 H480.

Ref: Hauch, vol 2 p 15, pl 4 fig 5f

1269 (HAUCHCOL). Funnels. Three.

Not signed (probably from Holland).

c1800 (g).

Glass. Maximum Dia210, cone H160, overall H310.

1270 (HAUCHCOL). Gas holder.

Not signed (probably from Holland).

c1800 (g).

Glass with brass fitting. Dia320 H420. Neck with brass collar Dia150. This has two tube connections, one with a brass funnel. Internal syphon tube. Wooden stand H900, adjustable.

1271 (HAUCHCOL, AWH G27).

Glass sphere for weighing air.

Not signed.

c1800 (g).

Dia250. Brass collar with stop cock and connection to vacuum pump. Overall L430.

1272 (HAUCHCOL). Glass jar.

Not signed (probably from Holland).

c1800 (g).

Dia130 H170. Brass collar and cover-plate Dia118 with three connections for tubing, two of them with brass stop cocks. Bent glass tube with connection fitting.

1273 (HAUCHCOL 656, AWH E38).

Condensation tube, distillation.

Not signed.

c1800 (g).

"Weigel's cooler". Black painted metal tube Dia55 L530 with connections for cooling water. Inside glass tube for condensing steam.

Ref: Hauch, vol 2 p 11, pl 3 fig 14.

1274 (HAUCHCOL 275, AWH-).

Pipette.

Not signed.

c1800 (g).

Lacquered sheet iron, body Dia20 with narrow spout. Overall L130.

1275 (HAUCHCOL). Gasholder. Two.

Not signed (probably from Holland).

c1800 (g).

Glass Dia155 H260. Neck with brass collar and cover Dia95. Three threaded connections, two with stop cocks, one of which has a brass funnel. Brass base on four feet. Brass scale indicating contents of the flask 0-215 cubic inches.

1276 (HAUCHCOL). Chemical glass flask

Not signed.

c1800 (g).

Dia185.

1277 (HAUCHCOL).

Chemical glassware. Four flasks,

Not signed.

c1800 (g).

(a) Dia180, neck L60, overall L480; (b) Dia200, overall L510; (c) Dia130, overall L350; (d) Dia135, overall L450.

1278 (HAUCHCOL). Alembic.

Not signed.

c1800 (g).

Glass. Dia105, overall H260. Tube for distillate L200.

1279 (HAUCHCOL). Flask.

Not signed.

c1800 (g).

Glass Dia250 H200. Flat bottom; two ground spouts. Probably intended for production of oxygen by heating mercuric oxide.

Ref: Hauch, vol 2 pl 7 fig 1A.

1280 (HAUCHCOL). Retort.

Not signed.

c1800 (g).

Glass Dia115, neck L300.

Ref: Hauch, vol 2 pl 3 fig 9.

1281 (HAUCHCOL).

Separating funnels. Three.

Not signed.

c1800 (g).

Glass. L260, L270, L530.

1282 (HAUCHCOL).

Funnels with narrow spouts. Three.

Glass.

Not signed.

c1800 (g).

(a) Dia110 H180 spout from bottom L110; (b) Dia100 H200 L100;

(c) Dia170 H340 broken.

1283 (HAUCHCOL). Glass vessel, circular, double, probably for cleaning mercury.

Not signed.

c1800 (g).

Outer vessel Dia90 with collar Dia135, extending inwards over the cylinder to Dia70 and with four holes Dia8 inside the cylinder. A "beaker" without bottom fits in the collar and extends almost to the bottom of the outer vessel. Overall H80.

1284 (HAUCHCOL 230 and 231, AWH A5 and A6). Bell jars for vacuum.

Not signed.

c1800 (g).

Glass with brass collar at the top, with sealed-in wooden beakers. For pressing mercury through the wood by vacuum. Ref: Hauch, vol 1 p 7, pl 2 fig 4 and 5.

1285 (HAUCHCOL 247a). Bell jar.

Not signed.

c1800 (g).

Glass. Dia175 with a narrower extension at the top (Dia40 H120) ending in a brass collar with stuffing box. Through this is a brass rod with a cork stopper inside the extension neck, and with a ring for pulling the rod from the outside. Purpose of the instrument is not clear. Overall H420.

1286 (HAUCHCOL 247b). Bell jar.

Not signed.

c1800 (g).

Glass Dia135 H225. Brass top with inside hook for suspending objects in vacuum.

1287 (HAUCHCOL 247c). Bell jar.

Not signed.

c1800 (g).

Glass. At the top Dia130, at the middle Dia185, opening at the bottom Dia120. Brass top with narrow brass rod inside, pointing down.

1288 (HAUCHCOL 247d). Bell jar.

Not signed.

c1800 (g).

Glass. Dia105 H235. The top is closed by a wooden cap Dia50 H50.

1289 (HAUCHCOL 274e). Bell jar.

Not signed.

c1800 (g).

Glass. Dia160. Ending at the top in a neck Dia50 H230 closed by a brass cap with a stuffing box. Through this a brass rod is holding a stopper against the inside of the glass. The stopper is probably made of resin (or rubber), red colour. Cf item 1285. Overall H440

1290 (HAUCHCOL 228). Bell jar.

Not signed.

c1800 (g).

Glass. Spherical body Dia180 opening below in a short neck Dia95. At the top is a brass cap with threaded connection, apparently for vacuum pump. This is connected to a brass tube Dia6 inside the jar, ending approximately 100mm from the opening. Overall H300.

1291 (HAUCHCOL 247f and g).

Vacuum bottles. Two.

Not signed.

c1800 (g).

Pear shaped glass. Closed at the neck by brass cap with stopcock and threaded connection for vacuum pump. (a) Maximum Dia64 L200; (b) Maximum Dia110 L290.

1292 (HAUCHCOL 247h). Bell jar.

Not signed.

c1800 (g).

Glass. Dia130 H250. Brass cap Dia80 with brass manipulator with small hook. Threaded hole closed by knurled cylinder screw.

1293 (HAUCHCOL 247i). Bell jar.

Not signed.

c1800 (g).

Glass. Dia120 H170. Brass cap Dia74 H50 with stuffing box. Brass rod manipulator, ending inside the jar in S-shaped spiraled brass body. Probably for stirring.

1294 (HAUCHCOL 247k). Bell jar.

Not signed.

c1800 (g).

Glass. Dia175 H260. Brass cap Dia57 H57. Stuffing box with brass rod manipulator.

1295 (HAUCHCOL 247l). Bell jar.

Not signed.

c1800 (g).

Glass. Dia160 H270. Brass cap Dia73 H25. Stuffing box with brass rod manipulator.

1296 (HAUCHCOL 369). Bell jar with propeller.

Not signed.

c1800 (g).

Demonstration of air resistance. Glass jar Max Dia180 H250 with knob at the top. Two brass propellers rotated by falling rack operating pinions on propeller axle. H140. Brass base Dia85.

Ref: Hauch, vol 1 p 32, pl 15 fig 3.

1297 (HAUCHCOL 229, AWH G77).

Demonstration of the reaction between acids and metals in vacuum (Hauch's description).

Not signed.

c1800 (g).

Boxwood stand consisting of base Dia130 on three turned feet. Two boxwood uprights H120 support on a brass rod between them a glass vessel Dia60 H35, which can be tipped. Below this is a larger glass vessel Dia95 H65. To be placed under a bell jar.

1298 (HAUCHCOL 249).

Clockwork for demonstration of sound in vacuum.

Not signed.

c1800 (g).

Brass 80x50x160. Spring wound. Two hammers striking a bell, and four "turkish moons" rotating on a vertical axle.

1299 (HAUCHCOL, 247m). Bell jar.

Not signed.

c1800 (g).

Glass. Maximum Dia250. Opening Dia200. H315. Brass cap Dia70 at the top.

1300 (HAUCHCOL 242, AWH G103).

Air gun with pump.

Signed: Lorenz in Wien

c1790 (g).

Barrel L800, steel, octagonal square section. Fruitwood stock with orna-

mentation. Iron butt forms the air chamber; unscrews for charging by means of the iron pump, Dia18 L480, bore Dia11.

1301 (HAUCHCOL 241). Air gun.

Signed, in the barrel: CONTRINER

c1800 (g).

Magazine for about 12 bullets. Barrel rifled; bore Dia10 L485. Fruitwood stock with ornamentation. Iron butt forms the air chamber; unscrews for charging by means of a pump. The magazine is a 160 mm long iron tube along the side of the barrel. At its end an iron slide can take a lead bullet from the magazine into the barrel, when the weapon is pointed upwards, allowing a bullet to fall into the slide.

1302 (HAUCHCOL 225). Bell jar.

Not signed.

c1800 (g).

Glass. Dia120 H170. Upon this is a brass cap Dia79 H65 with threads in which is screwed the brass base of another bell jar Dia50 L700. Accessories: Heron's fountain and a barometer tube with mercury cistern are missing.

1303 (HAUCHCOL 188). Bell jar.

Not signed.

c1800 (g).

Glass. Dia90 H130. Upon this is a brass cap Dia40 H40 with threads in which is screwed the brass base for a barometer glass tube H820.

1304 (HAUCHCOL 189). Bell jar.

Not signed.

c1800 (g).

Glass. Dia90 H120. Upon this is a brass cap Dia45 H30 with threads in which is

screwed the brass base for another bell jar Dia24 H700.

1305 (HAUCHCOL 248, AWH A55).

Guinea and feather experiment.

Not signed.

c1800 (g).

Glass cylinder in two parts, lower Dia130 H450, upper Dia100 H460, joined by threaded brass fitting. At the top is a brass cap with release mechanism for four falling objects.

1306 (HAUCHCOL 251). Bell jar with

built in suction pump to demonstrate, that this will not function in vacuum.

Not signed.

c1800 (g).

Glass Dia150 H330. At the top is a brass cap with threads for the base of a glass suction pump Dia43 H230. At its top is a brass funnel with outlet spout.

1307 (HAUCHCOL 190). Bell jar.

Not signed.

c1800 (g).

Glass Dia90 H100. Brass cap with glass tube Dia25 L700 (broken). Inside this is a barometer tube, at the top sealed into a brass valve, opening to atmosphere.

1308 (HAUCHCOL). Bell jar.

Not signed.

c1800 (g).

Dia50 H1000. At the bottom sealed into brass base with screw connection for vacuum pump and stop cock. Probably for bursting bladder experiment.

1309 (HAUCHCOL). Electrical

discharge tube for vacuum.

Not signed.

c1800 (g).

Glass Dia42 L1200. Brass base with stop-cock and threads for connection to pump. Brass cap at the top with brass sphere for electric connection.

1310 (HAUCHCOL). Electrical discharge tube for vacuum.

Not signed.

c1800 (g).

Glass Dia51 L630. Brass base with stop-cock and connection to pump. Brass cap at the top with brass sphere for electrical connection.

1311 (HAUCHCOL). Bell jar.

Not signed.

c1800 (g).

Open at top, for bursting bladder experiment. Glass. Bottom Dia130, top Dia86. H~700.

1312 (ODENKATE). Hygrometer, Mason's. Psychrometer.

Signed on the thermometer: Scalaen C hundrededels Grader. A Værdien af Pariser Linier. J Nissen Kbhvn 1849.

Signed on brass plaque: Psychrometer / B-A = Damptrykket i par Lin / Julius Nissen / Kjöbenhavn. 1849.

Wooden stand, base 155x90. Upright H470 with two brass brackets for thermometers. Mercury in glass thermometer Dia18 L330 (one is missing) has brass cap with hook for suspension. Scale -15 to 35° C and 3 to 14 Paris lines.

1313 (ODENKATE). Siren.

Not signed.

c1880 (g).

Brass Cylindrical windchest Dia50 H50 with conical connection to air stream at the base. Steel axle. Brass rotor with 20

air holes drilled on the bias. No revolution counter.

1314 (ODENKATE). Rotating mirror. Signed: Instrumentfabriken "Fysik" / ERIK WEITZMANN / HILLERØD KØBENHAVN

c1920 (g).

Four mirrors 150x90 mounted in oak plates 92x92. Iron tripod. Brass pillar. Knurled knob at the top for spinning.

1315 (ODENKATE). Cloud chamber. Signed: H.STRUERS CHEMISKE

LABORATORIUM / KØBENHAVN K c1930 (g).

Glass cylinder Dia80 H200 with rubber sealed iron mounting rings at the ends connected by three brass bolts along the glass cylinder. The cylinder is partly filled with stearin.

1316 (ODENKATE). Telescope.

Refracting.

Not signed.

c1860 (g).

Brass. Tube Dia80 L1100. Eye piece Dia33 L400. Coarse push fit focusing, rack and pinion fine focus. Tripod folding cabriole feet. Overall H600. Fitted oak box 1140x140x230.

1317 (ODENKATE). Sextant.

Signed: Cornelius Knudsen Kjöbenhavn.

c1900 (g).

One vertical strut and straight horizontal strut. Oxidized brass. Limb Rad190. Ivory scale -5 to 120° in 0.5° divisions. Vernier to 1 min. Brass index arm with T-cross section. Clamp and tangential screw. Shades for index and horizon mirrors. Telescope Dia20 L80, pinhole sight same dimension.

1318 (ODENKATE). Loudspeaker.
Dynamic.

Signed on brass plaque: LK 30 No
16557

Made by Laurids Knudsen, Copenhagen.

c1930 (g).

Oval metal base 230x155. Conical cardboard membrane Dia380. On/off switch at the rear.

1319 (ODENKATE). Spectroscope.

Not signed.

c1900 (g).

Brass with iron tripod with cabriole feet. Brass pillar Dia22 H200 supports a cylinder Dia60 on which are mounted collimator Dia30 L170 with adjustable slit, scale tube Dia24 L110 and telescope Dia30 with rack and pinion focusing. Reflecting and refracting prism.

1320 (ODENKATE) Discharge tube.

Vaccum.

Not signed.

c1900 (g).

Glass Dia120. To show the heating effect of the cathode rays. A piece of platinum foil at the focus of the concave cathode is brought to white heat by bombardment of electrons. Turned wooden base Dia125. Overall H390.

1321 (ODENKATE). Discharge tube.

Vacuum.

Not signed.

c1900 (g).

Pear shaped glass Dia90 L210. Containing phosphorescent shells, calspar etc. Turned wooden base Dia 105.

1322 (ODENKATE). Phonograph.

Signed: THE GRAPHOPHONE / Perfectionned Type K

c1890 (g).

Wooden case 290x190x140. Spring motor. Centrifugal regulator. Recorder head with crystal and mica membrane (marked "RECORDER"). Loudspeaker missing. No wax cylinders.

1323 (ODENKATE). Electroscope.

Goldleaf.

Not signed.

c1900 (g).

Glass sphere Dia165. Brass top with threaded ebonite insulator. Black painted wooden base Dia135.

1324 (ODENKATE). Cyro.

Signed: Newton & Co /

3 Fleet St Temple Bar / London

c1900 (g).

Brass Dia105. Steel axle. Mounted in balance arm with counterpoise. Steel point on brass base Dia85.

1325 (ODENKATE). Balance.

Westphal's for measuring specific gravity of liquids.

Not signed.

c1900 (g).

Brass. H200 L240. Bone scale. Brass arm with hooks for riders. Glass is missing. Fitted mahogany box 250x170x95.

1326 (DANMTEKN 2015).

Galvanometer. Moving coil.

Signed: DANSK ELEKTRO INSTRUMENT FABRIK A/S / DEIF / THORSGADE 59 KØBENHAVN N

c1930 (g).

Demonstration instrument. Mahogany

case. Base 410x180x420. Scale Rad250 0-3 and 0-10. Coil for 10 mA at 60 mV. Collections of shunt and series resistances.

1327 (DANMTEKN DANMTEKN).

Bichromate cell.

Not signed.

c1930 (g).

Bottle Dia120 H220 with glass base.

Neck Dia55 with brass collar with notches for inserting insulating plug with zinc and carbon. Sliding rod for raising and lowering the zinc.

1328 (DANMTEKN FS 116E).

Electrostatic generator. Wimshurst.

Signed: E.DUCRETET / PARIS / RUE CLAUDE BERNARD, 75

c1890 (g).

Mahogany base 305x125. Glass plates Dia195 with 35 pieces of foil. Two Leyden jars Dia38 H160.

1329 (DANMTEKN FS 104A).

Electrometer. Coulomb's torsion type.

Not signed.

c1900 (g).

Ebonized wooden base 220x220 with four levelling screws. Glass house 205x205x125. Loose glass lid with hole at the centre for glass tube H120 holding silk cord suspended in brass fitting and eccentric hole for introducing electric charge. Resin bar L100 with two pith balls is suspended in the silk cord.

1330 (DANMTEKN FS 474). Leyden jar battery.

Not signed.

c1900 (g).

Eight jars parallel connected by brass bars and chains. Dia160 H370 in wood-

en box 860x440. Terminals by Lane's discharger mounted at the outer side of the box.

1331 (DANMTEKN FS 198E). Leyden jar battery.

Not signed.

c1900 (g).

Five jars Dia60 H125. Mahogany box 350x90x90 with brass carrying handles and terminals.

1332 (DANMTEKN FS). Leyden jar battery.

Signed: MAX KOHL / Werkstätten für Präzisionsmechanik / CHEMNITZ i S. / CORNELIUS KNUDSEN / KJÖBENHAVN

c1900 (g).

Two jars Dia190 H800. Tin foil to H600. Brass parallel conductors. Wooden box on four porcelain feet.

1333 (DANMTEKN FS 29V).

Radiometer for heat radiation.

Not signed.

c1900 (g).

Evacuated glass sphere Dia70 H230 with internal resistance wire for heating. Glass mill with four mica vanes above the heating wire. Wooden base Dia78.

1334 (DANMTEKN FS 564).

Vacuum tube.

Not signed.

c1900 (g).

Glass sphere Dia100. In an extension at the top is an electrode under which is a glass partition with a swan-neck shaped opening to the sphere. A horizontal extension has an electrode, made up of a glass tube (about Dia6) filled with a

white material. On a small label at the sphere is written "Lithium". Purpose of this instrument is not clear; probably showing the spectrum for Li.

1335 (DANMTEKN FS 561). Vacuum tube. Double.

Not signed.

c1900 (g).

Two glass spheres Dia125 connected at the bottom by a glass tube. Electrodes at the top of each sphere. At the centre of each sphere is a piece of mineral. Purpose of the instrument is not clear; perhaps irradiation by cathode rays?

1336 (DANMTEKN FS 559). Vacuum tube.

Not signed.

c1900 (g).

Glass Dia70 L300. Demonstration of the deflection of the cathode ray by a magnetic field. Path of the ray is made visible by means of a longitudinal slanted phosphorescent screen. Turned wooden base Dia235.

1337 (DANMTEKN FS 567). Cathode ray oscilloscope tube.

Signed: RICH. MÜLLER-URI /
BRAUNSCHWEIG

c1910 (g).

Glass, Dia~90 L~300. With electrically heated cathode, anode with pinhole, condenser plates in the cathode ray beam and fluorescent coating of the glass tube end. Overall H260. Wooden base 325x125.

1338 (DANMTEKN). Vacuum tubes. Large collection of common types.

1339 (DANMTEKN FS 473).

Electrostatic balance.

Not signed.

c1900 (g).

Tripod with three levelling screws. Brass pillar Dia35 H660. Horizontal brass condenser plate Dia250 on insulating rod supported on adjustable brass bracket on the vertical pillar with scale 0-11 cm in 1 mm divisions. Above this is the other brass condenser plate of same dimension, supported by a brass bracket with bubble level. Shielded inside the top plate is a smaller plate Dia130 supported by a brass wire to a balance beam. Steel balance beam L440 with index L240 and bone scale. Pan for weights. Overall H800.

1340 (DANMTEKN FS 137E).

Capacitor. Variable air.

Not signed.

c1900 (g).

Brass plates Dia160 on brass pillars with glass insulating section. The pillars are mounted on slides, moving on brass bar L515 with scale 0-26 cm. The bar has pentagonal cross section 30x30. On one of the slides the supporting pillar can be tilted on a horizontal axis by means of an adjusting screw. The other can be adjusted by turning the pillar. Oak base 575x140.

1341 (DANMTEKN FS 138E).

Capacitor. Variable air.

Not signed.

c1920 (g).

Brass plates Dia110. Insulating pillars Dia16 H120. Movable on brass base in dove-tail grooves by adjusting screws. Base 200x105. Overall H215.

1342 (DANMTEKN FS 574).

Induction coil.

Signed: Ford

c1920 (g).

Black wooden case 128x53x84. Induction coils from the early Ford cars were widely used in Danish schools.

1343 (DANMTEKN). Insulating stool.

Not Signed.

c1900 (g).

Mahogany board 430x250x20 with diagonal inlaid brass bands. At one end of each band is a sloping hole Dia~25 into the wood, but not through. Four glass feet H180 Dia30-25.

1344 (DANMTEKN). Induction coil.

Ruhmkorff.

Signed: RUHMKORFF / A PARIS

c1870 (g).

Mahogany base 670x270x125. Ebonite covered coil Dia200 L500, ending in two black glass plates 23 mm thick Dia260. Two glass pillars support the high tension terminals. Hammer mechanism is missing.

1345 (DANMTEKN FS 56A).

Brass beaker.

Not signed.

Mid 19th century (g).

Dia60 at the top, Dia35 at the bottom, H65. Three Brass feet. Screw-on lid with hook-shaped conductor ending in small brass sphere – as if meant to hang on a conductor of an electrostatic generator. Purpose of this object is not known.

1346 (DANMTEKN Fs 38E).

Sturgeon's disc.

Signed: I.NEWMAN LONDON

c1850 (g).

Variation of Barlow's wheel. Circular brass plate Dia140 is dipping in a small groove in the wooden base, meant to contain mercury. Next to its bearing is a small cup 15x15 of mercury in which a small brass wheel Dia18 on the same axle as the larger is dipping. Electric connections allow current to flow from the centre to the mercury in the base. If this happens in a magnetic field, the wheels should rotate.

Ref: George, p 289.

1347 (DANMTEKN FS 712).

Capacitor. Standard.

Signed: Siemens & Halske A.G.

c1880 (g).

Mahogany case 210x160x80. with brass conductors and plugs for 0.1; 0.2; 0.2; 0.5 μ F.

1348 (DANMTEKN FS 477).

Electrostatic bells.

Not signed.

c1880 (g).

Turned wooden base Dia116. Brass pillar with glass insulating section and bell mounted below. Brass crossbar at the top with two bells suspended in brass wires so the all three bells are at the same level. Between them two brass weights are suspended in silk cords.

1349 (DANMTEKN FS 236J).

Capacitor. Variable air.

Signed: CORN.KNUDSEN / KJØBENHAVN

c1900 (g).

Cast iron base, formed as a tray Dia320 D15 mm. A glass pillar Dia24 H400 has two brackets, which can be moved up or down the glass and clamped in position by brass set screws. Each supports a

condenser plate. The lower has three levelling screws and a brass rod pointing down into the iron tray. The upper plate can be positioned by means of a micrometer, scale in mm and micrometer reading in 0.01 mm. Overall H420.

1350 (DANMTEKN FS 76A).

Discharge tube. Aurora globe.

Not signed.

Mid 19th century (g).

"Electric egg". Glass Dial60 L200. Brass connection with stop cock for vacuum pump, and inside brass sphere for discharge. At the top brass cap with stuffing box for brass rod adjusting discharge sphere inside the glass.

1351 (DANMTEKN FS 48A).

Discharge tube. Aurora globe.

Not signed.

Mid 19th century (g).

Glass Dia80 L400. Brass top and bottom. Overall L550.

1352 (DANMTEKN FS 43A).

Discharge tube. Aurora flask.

Not signed.

Mid 19th century (g).

Pear shaped bottle with tin foil inside and outside the rounded bottom. Dial105. Brass cap with sphere and a brass point inside the flask. Overall L280.

1353 (SORØAKAD 174).

Plateau's apparatus.

Not signed.

c1860 (g).

Glass vessel Dial60 H260. Wooden lid with brass plate Dial60 upon which is mounted a spring clockwork in a cylindrical glass housing H45 with brass lid

Dia95. The clockwork drives a thin vertical steel axle at the centre of the glass vessel. On the axle are three brass discs Dia7.5; 6.5 and 5.0 spaced 4 cm.

Joseph Plateau (1801-83) examined 1843 the shape of oil drops rotating under weightless conditions in mixture of alcohol and water.

Ref: Poggendorff's *Annalen* 55, p 517 and 56, p 167. Chwolson, I p 573.

1354 (HAUCHCOL 780a, AWH K113).

Volta's condenser.

Not signed.

c1800 (g).

Marble disc Dia235 H37. Compared with Hauch's inventory gilded glass plate suspended in silk cords and varnished taffetas plate are missing.

1355 (HAUCHCOL 320, AWH A57).

Atwood's fall machine.

Signed, engraved on the pendulum:

Dumotiez Frères / Rue du Jardinnet / St Ande Des Arcs / A Paris

c1790 (g).

Mahogany base 480x480x43 with four level screws. Mahogany turned column in two parts Dia90-60 H1780 joined by wood threads. At the top is a platform with two brass wheel-bearings on conical pivots, a steel axle with a pulley wheel rides on the four brass wheels. Boxwood scale 0-68 inches divided in decimals. Along the scale may be positioned brackets with brass stage and ring for removing bar weight added to circular weight, which is to pass through the ring. Mounted on the column is a weight driven second's pendulum clock with anchor escapement.

Ref: Hauch, vol 1 p38; Van Marum, p 158 ff.

1356 (HAUCHCOL 363, AWH A53).

Friction machine.

Not signed.

c1800 (g).

Musschenbroek's. (Tribometer).

Mahogany. Base 230x520. Upon this four mahogany cabriole uprights support a frame 280x200 with metal bearings for a wooden pulley Dia100 L110. Cord with weights and a balance pan. Interchangeable bearing metals. Overall H~700.

Ref: Musschenbroek, p 171 tab V fig 7. Hauch, vol 1 p 36, pl 5 fig 11.

1357 (SORØAKAD 298). Capillary tubes of different diameters.

Not signed.

Mid 19th century (g).

Glass. Four L110 dipping in glass trough Dia65 H50. Mahogany base 120x75 and support H100 for the glasses.

1358 (SORØAKAD 180).

Demonstration of vacuum. Two.

Not signed.

Mid 19th century (g).

Brass cylinders Dia22 L120 with pistons ending in handles. Under these are lead weights Dia48 L45. Lifting the pistons will cause the atmospheric pressure to lift the lead weights.

1359 (HAUCHCOL 252, AWH G105).

Suction pump. Demonstration model.

Not signed.

c1800 (g).

Glass tubes, brass fittings, mahogany stand. Water basin lined with lead 400x240x100. Two mahogany uprights support a bracket secured by wing nuts in slits. The bracket has holes for glass

pump Dia65 and 55 and two glass drain tubes with funnels at the top. Above the pump tube is a glass bowl for receiving water from the pump and with spouts to the two glass funnels. Brass pump arm L550. Overall H800.

1360 (HAUCHCOL 154, AWH G106).

Pressure pump. Demonstration model.

Not signed.

c1800 (g).

Glass tubes, brass fittings, mahogany stand. Base 440x220. A glass bowl Dia200 H360 contains a glass pump tube Dia50 L150 with piston. From a brass fitting at the bottom the water is pressed up through a glass tube Dia30 H600 to an overhead water container, from which it may return through a brass tube to the glass bowl. Brass pump arm L500. Overall H~700.

1361 (HAUCHCOL 252, AWH G107).

Pressure pump with air chamber.

Not signed.

c1800 (g).

Demonstration model. Glass pump tube Dia60 H220 with piston, connected to brass pump arm. Brass fittings. From the pump tube, water is taken via a glass air chamber Dia31 H90 with a check valve, to a glass tube Dia14 which lifts the water to an overflow to a glass funnel and return glass tube. The base is a lead lined mahogany basin 400x240.

1362 (HAUCHCOL 371, AWH A46).

Demonstration of resistance against movement.

Not signed.

c1800 (g).

Black sheet iron case 310x160x110 with a lengthwise sheet iron wall dividing it in two equal sized spaces. In each a pendulum, suspended in a brass gallows, may swing. A mechanism allows for simultaneous release of the pendulums. Overall H250.

1363 (SORØAKAD 255). Fire engine model.

Not signed.

c1840 (g).

Cast iron stand with two glass pump tubes Dia30 H140 and a glass air chamber Dia80 H120. Double acting pump arm L440. Overall dimensions 400x140x360.

1364 (HAUCHCOL 243). Air pump. Pressure.

Signed on the yoke above the barrels: Dumotiez Freres Rue Du Jardinnet Paris c1800 (g).

Brass. Two barrels, side by side, operated by steel racks. Brass base with four screw feet to fasten at a table. Four brass pillars H200 support a top brass plate which holds a glass cylinder Dia220 for pressurized air. The glass is surrounded by wire netting for security. Overall L500 W250 H450.

1365 (HAUCHCOL 223). Air pump. Vacuum.

Not signed (probably Jeppe Smith?). c1800 (g).

Two barrels of glass Dia60 L220. Pistons operated by steel racks. Two brass pillars Dia27-24 support a heavy wooden yoke with guides for the racks. U-tube manometer under glass. Glass plate Dia260.

1366 (HAUCHCOL, AWH G100).

Air pressure fountain.

Not signed.

c1800 (g).

Brass cylinder Dia105 H330, painted red. Jet nozzle extending upwards L200 with brass stop cock and threaded connection for pressure syringe. Overall H530.

1367 (DANMTEKN). Tesla coil.

Signed: Brock & Michelsen / København

c1920 (g) (firm founded 1905).

Wooden base 800x400. Three insulating pillars support the primary coil Dia350 H70 with seven windings. Adjustable spark gap, metal Dia10, enclosed in glass jar Dia100 H180. Secondary coil Dia100 H550.

1368 (DANMTEKN, FS 464). Electrostatic generator.

Signed: Cornelius Knudsen / København Aarhus

c1950 (g).

Induction type. Wooden base 1000x550x50. Stationary ebonite disc Dia520 H110; on each side is a rotatable ebonite disc Dia460, rotating on common axle. 32 screws placed in a circle in each disc are contacts for brass brushes. White metal high tension electrodes, variable distance. Two Leyden jars Dia50 H250. Operated by electric motor, 125 W 220 V.

1369 (DANMTEKN FS 879). Photo camera.

Signed: EASTMAN VIEW No 1 / IMPROVED MODEL OF CENTURY VIEW / AND EMPIRE STATE No 1 / MANUFACTURED BY / EASTMAN KODAK Co ROCHESTER N.Y.

c1910 (g).

Mahogany, brass bound 280x215x130. Bellows, two objectives marked "WOLLENSAK OPTICAL CO ROCHESTER N Y USA" and "ILEX SHUTTERS". Three folding legs marked "FOLMER & SCHWING DIV. PATENTED". Fitted box 580x160x350, leather handle, lined with red felt.

1370 (DANMTEKN). Photo camera. Not signed. c1920 (g). Mahogany case 215x250x300 opened; folded 215x250x75. Fixed two-lens objective with iris diaphragm in brass frame. Curtain shutter.

1371 (DANMTEKN FS 27L). Prism. Not signed. Mid 19th century (g). Glass. Triangular, each side 70x150. Brass framing.

1372 (DANMTEKN FS 134). Lens. Not signed. Early 19th century (g). Convex glass. Dia80. Focus about 30 cm. Turned wooden frame with stem Dia12 L230.

1373 (DANMTEKN FS 143L). Refracting index for liquids apparatus. Not signed. c1900 (g). Brass. Telescope Dia28 L150. Semi circular container in brass cylinder Dia35 with lid to screw on is mounted on a bracket at the telescope objective. Micrometer adjustment 0-100 with crosswire. Shaped fishskin fitted case. Lined with mauve vellum 250x70x50.

1374 (DANMTEKN FS 663). Spectrometer. Signed: HANS HEELE / BERLIN c1920 (g). Portable. Brass. Collimator Dia18 L80 with micrometer. Telescope Dia18 L180. Scale tube. Overall L280. Black fishskin box 315x110x70.

1375 (DANMTEKN FS 5L). Lens. Plano-convex. Signed: J.DUBOSCQ / A PARIS c1850 (g). Dia60. Glass. Mounted in black brass frame Dia180. Brass foot Dia110. Expandable brass pillar H270.

1376 (DANMTEKN FS 196). Prism and lens. Signed: J.Duboscq-Soleil à Paris c1850 (g). Equilateral triangular glass prism and weak convex lens. Glass. Prism side 90x40. Lens Dia58. In black brass framing. Expandable brass stand. Base Dia135. Pillar H~240.

1377 (DANMTEKN FS 31L). Mirror. Not signed. Mid 19th century (g). Metal. Dia134. Universal joint. Black lacquered wooden pillar H200. Wooden base Dia200. Push fit brass cover for the mirror.

1378 (DANMTEKN FL 511J). Galvanometer. Signed: SIEMENS & HALSKE / NR 182822 (327024) (433248) 1910 (acquired). Mirror. Moving coil. Three. Base Dia140. House for permanent magnet 85x32x90. Brass for suspended cord.

Spirit level. Three adjustable feet. Overall H380.

1379 (DANMTEKN FL 831J). Spirit level tester.

Signed: THE CAMBRIDGE SCIENTIFIC INSTRUMENT Co LTD / CAMBRIDGE ENGLAND No 7145

1911 (acquired).

Two T-shaped horizontal cast iron members with V-bearings (knife edge) at top of the "T" and micrometer adjustment at the foot of the "T". The micrometer indicating to 1 sec. Level to be tested is mounted at the upper "T". L460 W150.

1380 (DANMTEKN FL 750J).

Microscope. Compound.

Signed: CARL ZEISS / JENA / Nr 71492

1926 (acquired).

Black iron U-base and pillar to joint. Circular stage Dia110 with springs for object glass. Bracket to tube with fine focus on top of the pillar. Coarse adjustment by rack and pinion on tube bracket. Brass tube Dia35 L180. Substage mirror in stirrup.

1381 (DANMTEKN FL 121J).

Saccharimeter.

Signed: Sucre Incristallisable – Sucre cristallisable / SACCHARIMETREA PENOMBRES / J.DUBOSCQ / à Paris c1850 (g).

Grey iron base Dia185. Brass pillar Dia21 expandable minimum H210. Universal joint to the glass tube cradle. Tube is missing. At the eye piece end is the rotatable measure disc Dia200; scale 100-0-100° in 0.5° divisions; vernier to 3 min. Black sheet iron cover with vent.

1382 (DANMTEKN FL 1605J).

Saccharimeter.

Signed: BELLINGHAM & STANLEY LTD / LONDON / No 370810

1949 (acquired).

White metal. Tube L560. Two telescopes for reading (defective)

1383 (DANMTEKN FL 734J).

Spectrometer.

Signed: SCHMIDT & HAENSCH

1915 (acquired).

Ring shaped iron base with three feet. Iron pillar with brass collimator, supported at the inner end, and with screw level adjustment at the outer. Brass stage at the centre Dia75. Telescope rotatable with scale and micrometer to reading by means of prism of 1 min.

1384 (DANMTEKN FL 377).

Refractometer. Tully's type.

Made by: Fuess, Berlin. (inf)

c1900 (g).

Glass hemisphere Dia20 covered by cylindrical rotatable house with the reading telescope with prism. Iron base, expandable brass pillar.

1385 (DANMTEKN FL 678).

Refractometer. Pulfrich's type.

Signed: MAX WOLTZ, BONN No 3003

1911 (acquired).

Iron tripod, painted grey. Pillar H70 supports plate 80x65 with upright supporting the specimen. An A-frame supports the axle for scale ring and telescope. Scale 0-90° in 0.5° divisions; vernier to 1 min. Tangential screw and clamp. Counterpoise for reading telescope.

1386 (DANMTEKN FL 132J).

Spectrometer.

Signed: Frantz Schmidt & Haensch /
Berlin S

c1880 (g).

Iron tripod with levelling screws. Turn-
table with underlying scale, visible thro-
ugh two openings. Scale 0-360° in 20
min divisions; two diametrically opposi-
te verniers to 30 sec. Object table
Dia75. Collimator Dia35-26 L240 with
adjustable slit.

1387 (DANMTEKN FL 291). Reading
telescope.

Not signed.

c1900 (g).

Iron tripod. Brass pillar. Vertical posi-
tioning by coarse and fine adjustment.
Fitting for scale; vertically adjustable.
Horizontal angle adjustment with tan-
gential screw and clamp. Telescope
Dia30 L220. Eye piece focus by rack
and pinion.

1388 (DANMTEKN FL 1757).

Resistance standards.

Signed: N.C.JENSEN / KØBENHAVN
c1940 (g).

Oak case 122x122x58 with ebonite top
115x115. A collection of these for stu-
dent experimenting. Ratings: 10 Ω , 1000
 Ω and 10000 Ω , all +/-0.02 per cent.

1389 (DANMTEKN FL 1510J).

Resistance.

Signed: N.C.JENSEN / KØBENHAVN
/ No 1870

1942 (acquired).

Dial. Mahogany case 140x140x60 with
ebonite top. White metal contacts for
rotatable switch: 1, 10, 100, 1000, 10000
 Ω .

1390 (DANMTEKN FL 1615J).

Resistance.

Signed: N.C.JENSEN / KØBENHAVN
/ No 2458

c1940 (g).

Dial. Oak case 154x154x90 with eboni-
te top. 1, 10, 100, 1000, 10000 Ω at 20
°C.

1391 (DANMTEKN FL 1733).

Capacitor.

Signed: N.C.J. No 2384

c1940 (g).

Oak case 125x125x60 with ebonite top.
0.01 mF. Internal parts are sealed in
stearin. Made by N.C.Jensen.

1392 (DANMTEKN FL 1613J).

Capacitor.

Signed: N.C.JENSEN / KØBENHAVN
1949 (acquired).

Oak case 150x150x90 with fixed 20-pla-
te capacitor 68x68x60. 0.001 μ F.

1393 (DANMTEKN FL 1735).

Capacitor.

Signed: N.C.JENSEN / KØBENHAVN
/ No 5000

c1950 (g).

Grey lacquered case 115x115x90 with a
variable-plate air capacitor fixed in
position. 100 pF.

1394 (DANMTEKN FL 1614).

Self-induction.

Signed: N.C.JENSEN / KØBENHAVN
/ No 2460

1949 (acquired).

Coil. Oak case 150x150x65 with black
ebonite top. Two parallel wound coils
(copper) on the same wooden reel,
each 0.01 H.

1395 (DANMTEKN FL 1600Ja).

Self-induction.

Signed: N.C.J. / No 2245

1949 (acquired).

Coil. Oak case 150x150x60 with black ebonite top. 0.1 H.

Made by N.C.Jensen.

1396 (DANMTEKN 1600Ib).

Self-induction. Standard.

Signed: N.C.JENSEN / KØBENHAVN / No 2136

1949 (acquired).

Oak case 125x125x60. Ebonite top with coil mounted below. 0.001 H.

1397 (DANMTEKN FL 290J). Reading telescopes. Two.

Not signed.

c1900 (g).

Iron tripod. Brass pillar. Vertical positioning by coarse and fine adjustment. Horizontal angle adjustment with tangential screw and clamp. Telescope Dia45 L330. Eye piece focus by rack and pinion.

Made by SOCIÉTÉ GENEVOISE (inf)

1398 (DANMTEKN FL 210). Wilson's gold leaf electrometer for ion measuring.

Signed: THE CAMBRIDGE SCIENTIFIC INSTRUMENT Co Ltd / CAMBRIDGE ENGLAND No 3368.

1906 (acquired).

Title cited from local inventory list. Brass house 60x60x60 with circular window Dia25 at one side and opaque window opposite side. A brass shutter 42x42 gives access to the interior. Connection to a gold leaf is insulated. At the underside is a circular opening Dia35 covered by a metal foil. This is all mounted on a tripod with iron stand. Below,

on the stand, is a circular platform Dia75. Also on the stand is a reading telescope with an optical scale 0-100. The use of this instrument is not clear.

1399 (DANMTEKN FL 826J). Reading telescope.

Signed: CARL ZEISS / JENA

c1900 (g).

Iron tripod with levelling screws. Brass pillar Dia30 H200 with expandable inner pillar with scale 0-150 mm. Inside this is a triangular section stand with rack and pinion adjustment and a scale 0-70 mm. The telescope tube Dia30 L110 is laterally adjustable by rack and pinion. Focusing by push fit eye piece. Scale on the eye piece: 14-19 mm. Spirit level above.

1400 (DANMTEKN FL 1285).

Micromanometer, Prytz'.

The microscopes are by Carl Zeiss, Jena, but the whole setup is probably made locally. The purpose and use is not known.

1920 (acquired).

The title is cited from local inventory list. Iron base upon which is mounted a heavy brass base 300x160 with rectangular opening in the middle and with three levelling screws. From each end of this rises a sturdy, oxidized brass stand supporting a microscope. Both microscopes have vertical tubes, one is fixed in position, the other is adjustable by rack and pinion. Eye pieces with prisms for horizontal observations. Rack and pinion focusing for both microscopes. A reading microscope is mounted next to the fixed microscope for determining height of the adjustable microscope.

K.P.Prytz, 1894-1921 professor at the Technical University of Copenhagen.

1401 (DANMTEKN FL 379J).

Polarimeter. Nörrenberg's.

Signed: Cornelius Knudsen / Kjöbenhavn

c1910 (g).

Wooden base 200x200x100 with drawer. Two brass pillars Dia8 H420 support a fixed top bracket and a viewing aperture. Mirrors which can be tilted, may be placed at the lower bracket. Also a ring fitting the lower bracket, is provided for supporting other materials for investigation.

1402 (DANMTEKN FL 751J). Quartz spectrograph.

Signed: Mon Jules Duboscq / Ph. Pellin / Paris

c1850 (g).

Black triangular iron base with three levelling screws. Brass pillar Dia45 H210 with horizontal brass disc Dia120, rotatable with scale 0-180-0° and vernier to 6 min. Clamp and tangential screw. Upon this are two brass A-supports H100 with bearings for brass cylinder housing the prism, and supporting two brass tubes. One is the collimator Dia35 L300 with micrometer on adjustable slit. The other ends in a wooden box, presumable a camera, with a brass plate 230x15 with slit 110x10. The plate can be displaced, so that a number of exposures can be made on the same photo. Tangential screw for adjustment of angle between the tubes.

1403 (DANMTEKN FL 918J). Reading telescope.

Signed: SOCIÉTÉ GENEVOISE / Pour la construction / D'Instruments de Physique / GENÈVE

c1900 (g).

Iron tripod with levelling screws. Brass pillar Dia35 H670. Adjustable height with clamp and fine adjustment screw. Telescope Dia30 L250. Eye piece focus by rack and pinion.

1404 (DANMTEKN FL 436J). Balance. Nernst type.

Signed: SPINDLER & HOYER / Werkstätte für Präzisionsmechanik / GÖTTINGEN / No 2974

1908 (acquired).

Stone base 322x120x20 with three levelling screws. House, aluminium frames with glass panels 280x85x215. Pillar Dia10 H165 with inner sliding pillar. Beam of very thin (Dia ca 0.5mm) glass suspended on a fine quartz thread. About 2mm hooks (platinum) are melted upon the glass beam. Index is a thin quartz thread; mirror scale at the bottom of the house, 0.5 mm divisions. Arresting by lowering the inner pillar. Weights are riders to be placed in the small hooks.

1405 (DANMTEKN FL 1676J).

Balance. Chemical with short beam.

Signed: PAUL BUNGE / Fabrik wissenschaftlicher / WAAGEN /

HAMBURG / No 9A5664

1951 (acquired).

Stone base, black 370x265. Mahogany house with glass panels. Chrome plated pillar H260. Aluminium beam L130. Ruby plate knife edge suspensions. Zeroing by riders on top of the beam.

Paul Bunge (1839-88) invented the short-beamed chemical balance about

1870. See: Hans Jenemann, in *Technikgeschichte Bd 52 (1985) Nr 2*.

1406 (DANMTEKN FL 777J). Weights.

Brass.

Not signed.

Made by 'Justerkammeret' (national office for weights and measures) according to inventory list.

1890 (acquired).

Set of 12 in box of beechwood 170x90x70. All weights marked with crowned C5.

Marked: 5 HEKTOGRAM, 2 HEKTOGRAM, 1 HEKTOGRAM, 5 DECAGRAM, 20 GRAM, 20 GRAM, 10 GRAM, 5 GRAM, 2 GRAM, 2 GRAM, 1 GRAM.

1407 (DANMTEKN FL 1222J). Weight.

Standard 1 kilogram.

Signed: 1 / KILOGRAMME /

Modèle / Fortin et Hermann à Paris.

(oval stamp:) MODELE / FORTIN

c1800 (g).

Bell metal (?). Dia54 H56. In cardboard box Dia65 H67 covered with red ornamented paper, lined with mauve velvet.

1408 (DANMTEKN FL 477J). Weights.

Set of seven.

Signed on brass plaque on the lid of the box: Vægtlodder / overensstemmende med / Kongelig allerhøjeste Resolution / af 20de August 1839.

c1840 (g).

Brass. Pear shaped with necks and heads. In mahogany box 238x105x75 with three boxwood forks for picking the weights by their necks. The second largest is marked with crowned PL. No indications of weights.

1409 (DANMTEKN FL 478J). Weights.

Set of 32 (one missing).

Signed on brass plaque on the lid of the box: Medicinalvægt / efter den borgerlige Vægt / bestemt ved Kongelig Resolution / af 20 August 1839 c1840 (g).

Nine cylindrical brass with lens shaped heads, all marked crowned PL and numbered 32, 24, 16, 8, 4, 2, 1, the two smallest without number. In circular hollows, under glass are three circular brass weights with four indents, three indents and one indent respectively also marked with crowned PL. 19 small silver weights marked: 10, 5, 2, 2, 1, 1, 1/2(2), 1/4 (4), 1/8 (4), 1/16 (3). Four boxwood forks, two missing. Fitted mahogany box 290x130x85 with lock and key.

1410 (DANMTEKN FL 1685J).

Balance. Chemical with short beam.

Signed: PAUL BUNGE HAMBURG

c1940 (g).

Stone base 450x250. Hexagonal mahogany house with glass panels. Brass pillar Dia20 H260 with bracket to be lifted for arresting. Steel knife edges on agate plates. Silvered pans Dia70. Set of weights 50,30,20,10,5,3,2,1 grams, riders to 0.1 gram can be applied from the outside. Maximum load 200 grams. Index L260, bone scale with prism and magnifying glass. Illumination from the rear.

1411 (DANMTEKN FL 177J). Balance.

Chemical.

Signed: H.Fleischer Berlin

c1930 (g).

Mahogany house 650x180x470 with glass panels. Brass pillar H260. Brass balance L365. Knife edges. Arresting by

elevation of beam. Zeroing and fine adjustment by adding riders to the beam by manipulation from outside.

1412 (DANMTEKN). Weights. Three.

Not signed.

c1910 (g).

(a) 1P, iron, with handle. Marked 1P (for Copenhagen), 1909, crowned C5;

(b) 1P marked as 1, except 1903;

(c) 0.5 kg marked 11 / DR / 131.

1413 (DANMTEKN FL 365J9).

Weights. Set.

Signed: G.WESTPHAL CELLE

c1880 (g).

Chrome plated 100, 50, 20, 10, 10, 5, 2, 1, 1 grams. Fractions: 0.5.....0.03 gram.

Forceps with bone points. Mahogany box, fitted, lined with mauve velvet, lock with key.

1414 (DANMTEKN FL 90J). Balance.

Chemical.

Signed: Professor / E.Jünger's Etabl / Kiöbenhavn

c1865 (g).

Mahogany house with glass panels. Brass feet with levelling screws. Two spirit levels. On a brass base about 275x275 four brass pillars H~200 support a 10 mm thick brass plate of same dimensions. This again supports three brass pillars. The middle one has Dia35-25 and has an agate plate in a dove tail groove. Brass beam L560 has agate knife edge bearings at the ends. Beam for arresting is lifted by brass rods, guided by the two other pillars. Steel index L400 with bone scale. Magnifying glass for reading. Pans Dial40 suspended in three brass bars.

1415 (DANMTEKN FL 481J).

Measures. Standards.

Not signed.

c1860 (g).

Steel, cross section 20x20 L947 (probably 3 alen (ell)). Brass ends. Mahogany box 970x40x30. Probably made at own workshops.

1416 (DANMTEKN FL 1755).

Galvanometer. Moving coil.

Signed: N.C.JENSEN / KØBENHAVN.

c1945 (g).

Mirror. Mahogany case 350x165x95 with glass front. White U-tube magnet. Frame with coil between shaped magnetic poles and fixed cylindrical core, suspended in cord with circular mirror. Suspension adjustable for zeroing. A number of these instruments are on hand.

1417 (NATIONAL D 154, 849/1).

Microscope. Cuff type.

Signed ? (entered from local file).

c1690 (Kunstammer inventory).

Ebony tube and base with silver ornamentation. H187. Three feet, pied de biche.

1418 (NATIONAL D1507).

Beam compass.

Signed: C.T.D.E.M. / 1616

Made by Christoff Treschler

1616

Brass bar L285. Square cross section. Two sliding sleeves of brass, each with a steel point L25. At one end is a rectangular brass plate with micrometer screw to one of the sleeves.

1419 (NATIONAL D6492). Quadrant.

Brass.

Signed: GEORGIVS HARTMAN
NOREMBERGE FACIEBAT ANNO
MDXLVII
1547.

Profatius' astrolabe quadrant for Nuremberg's latitude; marked "POLVS GRA49 MI50". Scale 0-90° in 1° divisions on both sides. Almucantars and six arcs of circle marked with names of stars. On the other side is a shadow square divided 0-12 for 45°. Made by Georg Hartmann 1489-1564.

1420 (ODENKATE). Saccharimeter.

Signed: C. REICHERT WIEN
c1910 (g).

Iron tripod. Iron pillar Dia28 H260. On the pillar is screwed a U-bracket holding a tray for glass tubes to contain sugar solutions to be examined. Brass tubes for polarizer and analyser. Scale for analyser 10-0-40° with vernier to 0.01. Three test tubes. Overall H380 L465. Fitted mahogany box 510x115x115.

1421 (ODENKATE). Galvanometer.

Tangent.

Signed: Cornelius Knudsen / Kjöbenhavn
c1900 (g).

Tripod with levelling screws. Turned wooden pillar Dia30-25 H215 with turned fruitwood stage Dia110. Compass brass Dia90; silvered scale 0-90-0-90° in 1° divisions. Needle missing. Copper ring Dia300 conductor Dia6.5.

1422 (ODENKATE). Milliamp- and millivoltmeter.

Signed: Helweg Mikkelsen & Co / Dansk Elektr. Instr.-Fabr. / København Ø.
c1920 (g).

Brown wooden box with fishskin cover 105x135x55 with built-in moving coil galvanometer and resistances. Ranges: 5, 10, 25, 100, 250 mA and 5, 10, 25, 100, 250 V.

1423 (ODENKATE). Induction machine.

Signed: BRITISH MADE
c1900 (g).

Wooden case 260x125x110. U-magnet L200 W90. Brass frame for crank, gear and pulley. Two rotating coils each Dia40 L45 on boxwood reels and covered with green velvet. Steel bar can be made to connect the magnetic poles, when not in use. Two brass terminals Dia22 L65 mounted on insulating handles.

1424 (ODENKATE). Induction apparatus.

Signed: CAMILLUS NYROPS ETABL / Kjøbmagergade 43 / KJØBENHAVN K
c1900 (g).

Mahogany base 230x110 with coil Dia40 L80 and brass bar Dia10 to push into the coil. Spring interrupter. terminals marked Z, K, P, S. Mahogany case 250x130x110.

1425 (ASKOV). Lens system.

Signed: Portrait-Euryscope III / No 7A / No 37877 / Voigtländer & Sohn / Braunschweig
Late 19th century (g).

Cylindrical brass house, Dia130 to 150, L270. Outer lenses convex, Dia105 and 100. Upright image. Pasteboard lens cover with turned ebony knob as handle.

1426 (ASKOV). Lens, plano-convex.

Not signed.
c1900 (g).

Dia250 in wooden frame 300x280 fastened in brass ring. Two nails at one corner seem to indicate position of lens, when in use. Max thickness about 60 mm.

1427 (ASKOV). Lens, plano-convex.

Not signed.

c1900 (g).

Dia210 in wooden frame 295x280.

Two nails at one corner seem to indicate position of lens, when in use. Max thickness about 60 mm.

1428 (ASKOV). Discharge tube.

Crookes'.

Not signed.

c1900 (g).

Glass L215, maximum Dia80. The anode is a hinged aluminium maltese cross, which when in the cathode stream casts a sharp shadow on the end of the tube. If the cross is allowed to fall out of the stream, the part of the glass formerly in the shadow will now fluoresce more brightly than the remainder. Turned wooden foot, painted black.

1429 (ASKOV). Discharge tube. Crookes', with mica wheel on glass rails.

Not signed.

c1900 (g).

The cathode stream of electrons impinging on the upper vanes sets the wheel in motion. Glass L310, max Dia50. Turned wooden foot.

1430 (ASKOV). Compass. Marine.

Lord Kelvin type.

Signed: Cornelius Knudsen København / ODIN / BROEN

c1900 (g).

Dry open compass rose. Eight small bar magnets suspended in silk threads. Brass bowl Dia275, in gimbals. The rose printed black and white, 128 points, 0-90-0-90° in 1° divisions. Glass cover in brass fitting. Central hole in glass for deflector and azimuth mirror. Softwood box 380x365x280 with brass handle and hooks.

1431 (ASKOV). Galvanometer, moving coil.

Signed on nameplate: SOPHUS

DELAURAN / AARHUS TELEFON

169 / Elektrisk Etablissement

c1900 (g).

Brass house Dia175, H80. Coil Dia~25. Mounted excentric in the house. Pointer L100. Two scales, one 0-100 equidistant, and one 100-20-10-...-2 (for resistance). Mirror reading. House mounted on brass plate Dia220. Adjustments on six contacts under the instrument, 0.1-1-10-100-500-0, probably factors for the scales. Marked on the scale: D R G M No 123356. Four shunts: 0.1, 1, 10, 100 and two variable rotary rheostats marked 3 and 30 for serial connection.

1432 (ASKOV). El-meter, universal.

Signed: UNIVERSAL 33 / NORDISK INSTRUMENTFABRIK HOLTE DENMARK

c1940 (g).

Black bakelite house 160x110x65 two terminals, one marked "-". Knob for adjustment 0-5A-1A-250-50-10-2.5-1-0.1 mA.-1000-250-50-10-2.5-x100Ω-x1Ω. Scales with mirror, (a) 0-50 equidistant marked "V-mA"; (b) 0-50 with condensed 0-10; (c) y-0 Ω. Switch for AC/DC. Leather carrying strap.

1433 (ASKOV). Induction machine.

Similar to E.M. Clarke's machine.

Not signed.

c1900 (g).

Horseshoe magnet L200, W100. Two rotating coils Dia40, L45 at the side of the magnet. All built into mahogany box 265x115x135. The coils are rotated via large and small gear operated by a crank Rad40 with boxwood handle. Steel bar can be made to connect the magnetic poles from the outside, when not in use. Two terminals outside the box.

1434 (ASKOV). Octant.

Trade labels are glued, one on top of the other inside the lid. The top one seems to be: "Spencer Browning & Co". One label has: "...10, Quayside, (ved Siden af Toldboden)" (sic).

Trade label: Martin Petersen / Uhr-Chronometer- & Instrumentmager / Børsgaarden Klosterstræde Svendborg / Tlf 537.

Late 19th century (g).

Ebony. Frame with two vertical struts and one straight horizontal strut. Limb Rad240. Ivory scale -3 to 109° in 20 min divisions. Ivory vernier to 30 sec. Clamp and tangential screw. Magnifier. Brass index arm, T-shaped cross section. Pin-hole sight Dia20 L80. Two telescope sights missing. Three shades for index mirror in square brass frames, three shades for horizontal mirror in round brass frames (one green, two red). No reverse sighting. No pencil or pencil container. Mahogany, shaped box 330x300, damaged.

1435 (ASKOV). Vacuum tubes, collection of 15 Geissler and vacuum tubes.

1436 (ASKOV). Phonic wheel.

Not signed.

This instrument is no doubt made by C. Jürgensen, Copenhagen, who cooperated closely with La Cour on developing his inventions.

c1870 (note Lord Rayleigh's patent 1889 for a similar device).

Paul La Cour's invention. Mahogany base plate 220x150. On this a brass plate 190x120 with two coils Dia24 L40. These will keep a cogwheel rotating at constant speed, once set in motion, when they are magnetized by an AC current with constant frequency. La Cour obtained this from a tuning fork arranged as interrupter.

The cogwheel has Dia100 with 30 rectangular teeth. It has a wooden cylinder Dia82 H20 containing mercury, giving the system a desired inertia. It seems that this instrument has had three terminals for triple telegraphy.

Ref: La Cour, p 17ff. Hansen, p 30ff.

1437 (ASKOV). Dipping needle.

Signed: E. JÜNGER KIOBENHAVN

c1860 (fl).

Tripod with three brass level screws. Brass pillar Dia22 H50. Horizontal silvered scale 0-360° in 30 min divisions. Upon this is a rotatable brass plate 330x73 with an arm with vernier. Reading to 1 min. Clamp and tangential screw missing. On the brass plate are two brass pillars Dia13-16 H90 supporting a beam L300 with bearing for the needle in the middle. The needle L250 pointing on a silvered scale 0-360° in 1/6° divisions. Mahogany frame 330x310x50 with glass panels. Two magnifiers for reading from the front. Spirit level has apparently been placed on top of the frame, but missing.

1438 (ASKOV). Thermometer, mercury in glass.

Signed: Carl Nielsen Kjöbenhavn
c1900 (g).

Mounted on mahogany stand. Base 145x120. On this is a mahogany pillar 33x11, L458, with brass brackets for holding the thermometer.

Thermometer Dia20 L470. Scale -35 to +50 Celsius. 0° is marked I.P. (Ispunkt).

1439 (ASKOV). Expansion apparatus.

Ferguson's pyrometer.

Not signed.

c1850 (g).

Mahogany base 470x65. Small brass stand with adjusting screw to hold one end of dilatation rod. At the other end the rod is pressing against the lower end of a pointer L350 indicating on a brass scale L280 with arbitrary numbers. Under the dilatation rod is placed a brass container for spirit, with a slit along the rod for heating. There is no means for measuring the temperature of the rod.

1440 (ASKOV). Hydrometer,

Nicholson's.

Not signed.

c1850 (g)

All glass. Maximum Dia35, L200. Stem L45. Bulb L60. Mercury fill. Pasteboard case Dia47, L220.

1441 (ASKOV). Hydrometer, lactometer.

Signed: Mælkeprøver Julius Nissen
Eftf.

c1850 (g).

Direct reading glass float. Stem L110. Pear shaped bulb Dia28 L80. Lead shot weight. Overall L230. Pasteboard cylindrical case Dia36 L250.

1442 (ASKOV). Air pump. Vacuum.

Not signed.

c1850 (g).

Single barrel, horizontal, brass Dia35 L300. Valve. Glassplate Dia230 and bell jar Dia110, H210. All mounted on a cast iron stand.

1443 (ASKOV). Centrifugal machine.

Signed: Chr.L.Weitzmann / Frederiksborg / Etablissement for / (...?)ngsapparater.

c1850 (g).

Wooden base 750x150 with wooden crank Dia300. Driving cord to Dia30 iron pulley. Eight attachments, (a) two small buckets, hinged to swing out when rotated; (b) steel spring to demonstrate the flattening of the earth at the poles; (c) Watt's centrifugal regulator; (d) Glasstubes with liquids of different densities; (e) two spheres connected by a string to demonstrate centrifugal forces (or angular momentum); (f) arched brass rod to support model of Foucault's pendulum; (g) glasstube (broken); (h) brass cylinder perforated as centrifuge.

1444 (ASKOV). Electrostatic

generator. Wimshurst, induction.

Not signed.

c1850 (g).

Wooden base plate 600x320. Ebonite discs Dia460 with 32 strips of tinfoil, partly oxidized. Glass insulators Dia19 L330 with conductors. The discs are supported on wooden trestles. Each has its driving cord and wooden pulley. Leyden jars are missing.

1445 (ASKOV). Electrostatic generator. Friction type.

Not signed.

c1800 (g).

Wooden base 730x295. An ebonite disc Dia420 is supported on two wooden pillars. Leather cushion in brass fittings fastened to the black painted sheet metal conductor Dia100 H230 supported on glass insulator Dia30 H260. The conductor has a turned wooden lid with ebony knob as handle. The other conductor is identical to this, but with brass points in stead of leather cushion

1446 (ASKOV). Projectile trolley.

Not signed.

c1900 (g).

100x100 iron plate with four wheels Dia50 with flange on inside like railway wheels. On the trolley is a brass funnel maximum Dia140 H100. At the bottom of the funnel a small ball (steel, originally probably bone or ivory) can be placed on a spring mechanism and ejected vertically upwards. When the trolley is moving horizontally at constant speed, the ball should return into the funnel. Running on two horizontal rails 115 mm apart, L1700 with extensions at both ends curved upwards for acceleration and breaking. Total L2700. The spring mechanism is released, when the trolley passes a knob between the rails.

Named "Karisevognen" this is allegedly made by K.C.Knudsen, teacher at "Karise Højskole" 1879-1910. This 'folk high school' (højskole) was closed down 1922 and some physical apparatus transferred to Askov.

1447 (ASKOV). Monochord.

Signed: C. Weitzmann / Frederiksborg
c1880 (g).

Softwood resonance box 790x100x50 with triangular cross section wooden scale on top. Scale 0 to 29 inches. Brass hook and pulley to hold string. Weights and string missing.

1448 (ASKOV). Relay. La Cour's Key.

Signed: FORSØGSMØLLEN / Askov
Vejen / 100 Amp 220 Volt / No 1000
c1895.

Relay for windmill generator. Black marble base plate 200x230x25. Two coils Dia45 L60. Power contact is made by brass Dia6 arm dipping into cup with mercury, operated by the coils. Function of the relay is to connect the windmill driven generator to the battery, when the production of electricity is sufficient to charge. Sheet metal cover with window.

Ref: Hansen, p 388ff.

1449 (ASKOV). Relay.

Not signed.

c1900 (g).

Iron base Dia190. Coil Dia60 L70 operating rocker with SPDT contact. The contacts are brass plates Dia12. Cover Dia160 H75 with glass top.

This was a new version of La Cour's Key relay item 1448.

Ref: Hansen, p 388ff.

1450 (ASKOV). Tuning fork, electromagnetic. La Cour's.

Not signed.

Made by C.P.Jurgensen (1838-1911)
(inf).

c1875.

Wooden base 500x160x23. Coil Dia45 L20 set between the fork ends, adjustable on two guides. The fork is fastened in a brass socket with electric terminals.

Adjustable brass weights on fork ends.
Overall L450.

1451 (ASKOV). Phonic wheel.

Not signed.

Made by C.P.Jürgensen (1838-1911)

(inf).

c1878.

Wooden base 220x150 with brass plate 190x118. Two coils Dia25 L40. Iron cogwheel with 30 cogs c 6x6x5, interacting inductively with the coils. On top of the wheel is a cylindrical Dia85 H24 boxwood container with mercury to give the rotating system adequate inertia. Patented 22 Nov 1877.

1452 (ASKOV). Clock. Operated by phonic wheel.

Not signed.

Made by C.P.Jürgensen (inf).

c1880.

Clock gear train mounted in brass frame 105x75x40. Worm gear on phonic wheel, steel axle.

Described in Paul La Cour: *Tonehjulet*, 1878. Max Kohl, Chemnitz adopted the idea and produced a "Phonisches Rad", see catalogue 1915 p 384 no 88665.

Ref: La Cour.

1453 (ASKOV). Telescope. Gregorian.

Signed: G + ADAMS, LONDON

c1770 (g).

Brass tube Dia130 L860. Eyepiece missing. Knob for adjusting secondary mirror missing. Push fit brass dust cover. Brass folding tripod. Brass pillar Dia40 H22. The tube is mounted on a vertical brass semicircle Dia150 with clamp. Overall H640 with horizontal tube.

1454 (ASKOV). Level, surveyor's.

Not signed.

c1900 (g).

Brass tube Dia32 L400. Objective Dia35. Eyepiece Dia22. Rack and pinion focusing. Spirit level. Oak tripod. Brass mounting with three level screws.

1455 (ASKOV). Telescope. Refracting.

Not signed.

c1800 (g).

Terrestrial. Brass tube Dia98 L1400. Objective Dia95 Eyepiece Dia37 L500. Push for coarse, rack and pinion for fine focusing. Erecting lens. Universal joint to pillar, expandable by worm gear. Oak tripod with wood carving. Viewfinder.

1456 (ASKOV). Telescope. Refracting.

Not signed (probably French).

c1870 (g) (acquired 1870-80).

Equatorial mounting. Tube L1700 Dia150-115. The tube is covered by brown painted material. Eyepiece push for coarse, rack and pinion for fine focusing. View finder with rack and pinion focus. Provision for clock which is missing. Iron column support.

1457 (ASKOV). Transit instrument.

Signed: Utschneider & Liebherr / in Munchen.

c1800 (g).

Brass tube Dia65 L830. Very defective. Only tube and support extant. Loose scale for altitude. Remnants of lamp.

1458 (ASKOV). La Cour's Key. 'La Cour Nøglen'. Exhibited as poster in Møllehuset (The Mill House). Cf no 1448.

1459 omitted.

1460 (DASRIBE).

Drawing instruments. Set.

Not signed.

c1900 (g).

Brass and steel. Two compasses L130, inserts for ink and pencil, small bow for ink, drawing pen with bone handle, etc. Box 200x77x25 black fishskin, fitted, lined with black velvet.

1461 (DASRIBE).

Drawing instruments. Set.

Not signed.

c1880 (g).

Brass and steel. Semicircular protractor, rule with three scales, transversals, chamfered edge L165, divider and compass L114 with inserts for ink and pencil. Set square. Box 190x93x23, brown leather with golden print, fitted, red velvet lining. Brass set square L137 and L75, W16, acanthus ornaments. Does not fit into the box.

1462 (DASRIBE). Level, surveyor's.

Y-type.

Not signed.

c1900 (g).

Brass. Tube Dia30 L350. Eyepiece Dia20. Objective Dia30. Rack and pinion focusing. Horizontal silvered scale 0-360° in 30 min divisions. Vernier to 1 min. Spirit level above tube. Cone for staff mounting. Wooden tripod with brass mounting plate, three level screws. Box, oak, fitted 430x240x140.

1463 (DASRIBE). Backstaff.

Signed: MADE BY ALEXANDER (sic) STEPHEN FOR Mr WILLIAM MUS-SON DUBLIN MAYTHE 7th 1732 1732.

Mahogany (?). L565. Large arc Rad530,

cross section 35x15, scale 0-25° in 10 min divisions, transversals reading to 1 min. Small arc Rad200, cross section 23x15, scale 0-60° in 1° divisions.

1464 (RIBKATSK).

Water decomposition, glass beaker.

Not signed.

Mid 19th century (g).

Conical H90 max Dia95. Glass stem and base Dia80. Two stubs for stoppers with electrodes. Around the rim is a brass collar W10 with a brass upright H160 with two hooks for hanging two test tubes over the electrodes.

1465 (RIBKATSK). Magnets,

permanent, bar.

Signed: SANDERSON BROTHERS & Co. CAST STEEL

c1900 (g).

Set of two, 267x23x13, with armatures. In mahogany box 307x85x35.

1466 (RIBKATSK). Electroscope.

Not signed.

Late 19th century (g).

Glass sphere Dia170 with brass neck Dia35 H50. Ebonite stopper and brass conductor to aluminium (former gold?) leaves. Ebony base Dia144 H75.

1467 (RIBKATSK). Electroscope.

Not signed.

Mid to late 19th century (g).

Glass sphere Dia110 with brass neck Dia25 H25. Ebonite stopper and brass conductor Dia9 terminating in a sphere Dia18. Aluminium leaves. Brass base Dia90 H60. Overall H270.

1468 (RIBKATSK). Conductor.

Not signed.

Mid to late 19th century (g).

Brass sphere Dia 185 on glass pillar Dia30 H220. Black wooden base Dia140. Also hand held conductor, brass sphere Dia25 ebonite handle Dia13 L100.

1469 (RIBKATSK). Piezometer. Ørsted's instrument for experiments on water compression. Not signed, but certainly made at the workshops of the Polytechnical University, founded by Ørsted 1829. c1840.

Glass cylinder Dia100 H400. Brass top with cylinder Dia45 H120, compression piston moved by crank. The internal manometer is almost intact. Wooden base 310x310.

Ref: Meyer, Vol II, p 310.

1470 (RIBKATSK). Thermometer, differential, air.

Signed: "C. WEITZMANN"

c1900 (g).

Modification of Leslie-Rumford type. Iron base 100x100 with iron pillar Dia13 H130. U-thermometer glass H320 W185 with glass bulbs each end Dia40 and painted dark. Mounted on boxwood frame with tin scales on each vertical arm 40-0-40. Mercury fill. Behind each bulb is a concave brass mirror.

1471 (RIBKATSK). Electrical apparatus, unknown use.

Not signed.

c1900 (g).

Wooden base 80x80 with two slits 53x4. A brass bush on the base is holding a vertical glass tube Dia15 H180. On this is a brass bracket L77 W20 0.5 mm thick, sliding vertically on the glass. At

the top of the glass is a brass cap with a vertically adjustable brass rod (conductor) Dia3 L105 ending at the top in a brass sphere Dia8 and at the bottom, inside the glass, in a hook.

1472 (RIBKATSK). Electrostatic generator.

Not signed.

Mid to late 19th century (g).

Induction. Holtz's type. Wooden base 490x350. On three iron feet is mounted a stationary glass plate Dia425 with two oblong tinfoils. A wooden pillar Dia65 H280 carries an axle with two glass plates Dia380 with six strips of tinfoil Dia35, each with a button of amber at the center. Two Leyden jars with conductors to spark gap.

1473 (RIBKATSK). Leyden jar.

Signed: C.WEITZMANN'S / ETABLISSEMENT / KJØBENHAVN

c1900.

Dia55 H100 with neck Dia18 H25. Stopper, brass conductor with small sphere, bent for hanging on prime conductor of electrostatic generator. Inside is gold foil, outside tinfoil H70.

1474 (RIBKATSK). Archimedian screw.

Not signed.

Mid to late 19th century (g).

Sheet metal tray 245x105 with mounted sheet metal screw Dia65 L180 on slant.

1475 (RIBKATSK). Turbine model.

Not signed.

Mid to late 19th century (g).

Sheet metal tray Dia170 H55 with sheet metal cylinder Dia80 H165 with six ang-

led spouts rotating on vertical axis.
Overall H300.

1476 (RIBKATSK). Thermopile.

Not signed.

c1900 (g).

Wooden base Dia145 and pillar H160.
Brass double cones max Dia85, min Dia30.

1477 (RIBKATSK). Galvanometer.

Astatic.

Signed on the scale: Julius Nissen

Kiöbenhavn

c1870 (fl).

Probably used with item 1476 as a Melloni thermo-multiplier. Mahogany base Dia175 with three levelling screws. Groove for glass dome Dia110 H200. Coil 70x20 L35. Upon this is a silvered plate Dia95 with scale 0-180/0-180. In a brass upright H170 is suspended a silk cord with two compass needles, one in the coil, one above the silvered scale. Zero adjustment by top screw.

1478 (RIBKATSK). Capacitor.

Adjustable air.

Not signed.

Mid to late 19th century (g).

Variable distance between plates.
Mahogany base 320x105 with dove-tail groove for two mahogany slides with glass pillars Dia18 H150 and two brass plates Dia110. At the middle is an ebony pillar Dia18 H80 with brass fitting to hold a dielectric e.g. glass plate.

1479 (RIBKATSK). Tantalus' beaker.

Not signed.

Early 19th century (g).

Glass. Base Dia130. Stem Dia30. Cup maximum Dia135 H125. Glass tube L100 through the stem is covered by

test-tube shaped glass L110 to form a siphon.

1480 (RIBKATSK). Fountain,

air pressure.

Not signed.

Mid to late 19th century (g).

Small, to place under a vacuum bell jar.
Glass Dia50 H80 with brass neck Dia20 H20. Brass stopcock and jet nozzle.

1481 (RIBKATSK). Steam engine model.

Not signed.

Mid 19th century (g).

Wood. Base 192x180. Cylinder Dia110 H180. With piston, slide valve and slide for reversing the motion. Disassembles by diametrical section.

1482 (RIBKATSK). Pascal's vases.

Not signed.

Mid 19th century (g).

Mahogany basin 270x270x170. Wooden upright H460 with brass bearing for balance arm L360. Mahogany tripod H155 with brass Boyle valve and fitting for glass vessels. Three vessels H270, (a) cylindrical Dia55; (b) conical narrow at the top Dia30; (c) conical wide at the top Dia160.

1483 (RIBKATSK). Cartesian divers.

Two.

Not signed.

Mid 19th century (g).

Black glass figures with white glass eyes and buttons. H60.

1484 (RIBKATSK). Centrifugal machine.

Signed, cast in the frame:

C. WEITZMANN

c1890 (fl).

Cast iron frame L700 W280 on three feet. An extra foot folds out and provides for vertical standing. Cast iron cranking wheel Dia240. Accessories, (a) lens shaped glass Dia140 H90 to contain mercury and water; (b) Watt regulator, brass, H240; (c) Savart wheels, four on the same axle. Dia83, 60, 50, 41; (d) iron bracket with brass rod Dia5 with two wooden spheres connected by cord; (e) iron bracket with two pivoting brass buckets; (f) axle with four iron springs to demonstrate the earth's flattening at the poles; (g) four rotating mirrors; (h) wooden arm with tilting test tube; (i) perforated brass cup (centrifuge).

1485 (RIBKATSK). Sirene.

Not signed.

Mid 19th century (g).

Brass cylinder Dia50 H50. Rotating disc with 16 holes on slant. Steel axle. Register with two gears and worm gear. Silvered scales 0-100 and 0-5000. Oval wooden base L210 W150. Oval glass cover.

1486 (RIBKATSK). Phonograph.

Signed: "14853"

c1910 (g).

Wooden box. Mahogany lid 280x200x180 with the phonograph mounted on the under side. On the upper side is a brass handle. Spring wound clock. Cylinder Dia54 L105. Centrifugal regulator. Pickup Dia45 with mica disc. Crystal missing. Aluminium horn max Dia300 L300.

1487 (RIBKATSK). Wave apparatus.

Not signed.

c1900 (g).

Mercury. Boxwood plate 280x180x27 with elliptical basin L212 W150. An upright cross section 15x15 supports an adjustable bracket with a small glass funnel for mercury placed over one focus of the ellipse.

1488 (RIBKATSK). Inclined plane.

Not signed.

Mid 19th century (g).

Mahogany. Base 315x110. Two uprights with notches for supporting one end of the plane 240x95. Small mahogany carriage 65x53x22 with lead weight and brass wheels Dia38. Pulley at the top.

1489 (RIBKATSK). Screw press.

Model.

Not signed.

Mid 19th century (g).

Mahogany and boxwood. Base 140x85. H200.

1490 (RIBKATSK). Worm gear.

Not signed.

Mid 19th century (g).

Mahogany base 155x85 and uprights H220. Brass worm gear Dia55, steel screw with crank and mahogany pulley.

1491 (RIBKATSK). Morse receiver.

Signed: Siemens & Halske / Berlin / No 656

c1900 (g).

Mahogany base 340x170. Brass weight driven clock. Two coils. Mahogany cover with glass panels. Relay station.

1492 (RIBKATSK). Air pump. Vacuum.

Not signed.

Mid 19th century (g).

Black iron frame 460x300. Brass cylinder Dia55 L210. Iron lever handle L400, parallelogram. Double acting,

automatic with check valves. U-tube mercury in glass manometer H145 for vacuum. Glass plate Dia220. (Cf item 1073).

1493 (RIBKATSK). Magdeburg hemispheres.

Not signed.

c1880 (g).

Glass. Dia100 L190. Thickness of glass about 6 mm.

1494 (HADEKATE). Revolution counter.

Not signed.

c1900 (g).

Steel house 50x18x12. Steel spindle. Four digits on internal rotating gears show in apertures of the house. Black painted handle. Overall L110. Fishskin case, 120x30x30, lined with blue felt.

1495 (HADEKATE). Weights.

Two 2 kg.

Signed in lead seal: D.R. / 221

Second half 19th century (g).

Cast iron. Dia68 H110.

1496 (HADEKATE). Pascal's vases.

Not signed.

Mid to late 19th century (g).

Cast iron base 280x135. Uprights of oxidized brass with brass fitting Dia54 H45 with thread and seat for Boyle valve. Four glass vessels, (a) cylinder Dia28 H155; (b) cylinder Dia15 H180; (c) S-shaped Dia15 H180; (d) conical maximum Dia100, minimum Dia32, H170. Brass lever L195 with counterpoise to the Boyle valve.

1497 (HADEKATE). Thermoscope.

Not signed.

c1900 (g).

Two glass spheres Dia40, one above the other. From the top one a glass tube protrudes into the lower. Contains spirit. By heating the lower sphere in the hand, the spirit is forced into the upper sphere by the vapour pressure.

1498 (HADEKATE). Manometer. Otto v. Guericke's.

Not signed.

Mid to late 19th century (g).

Cast iron base Dia60 with iron pillar Dia4 H120. Adjustable brass bracket supports a small balance L70 with a hollow glass sphere Dia45 at one end and brass weight at the other. Operates on buoyancy of air on the sphere. Invented by v. Guericke 1661.

1499 (HADEKATE). Hygrometer.

Daniell's.

Not signed.

c1900 (g).

Wooden base Dia105. Wooden pillar with thermometer -15 to 55°C for room temperature. Capillary with glass sphere Dia50 covered by cloth on one side, on the other a vertical glass tube Dia18 ending in Glass sphere Dia50 with golden band. Inside the glass tube is a thermometer -25 to 65°C (note: range goes well above room temperature).

1500 (NYKØKATE). Telescope.

Refracting.

Signed, clock: Cornelius Knudsen / Danmark / Konstr. J. Olsen

(crowned). (J. Olsen is the clock maker Jens Olsen, 1871-1945)

c1940.

Brass tube painted grey Dia150 L1600. Shade at objective L220. Carboard dust cover. Eyepiece, Huyghen's ocular

Dia50 L80. Rack and pinion focusing. Equatoreal mounting on iron column Dia150 H2000. Brass scale for R.A. to 1° , vernier to 5 min. Scale for declination 0-90-0-90° in 1° divisions, vernier to 5 min. View finder. Weight driven clock. Centrifugal regulator. Case 150x120x250 black painted.

1501 (NYKØKATE). Sextant.
Signed: Prof Smiths Etablm Kjöbenhavn No 192.

Trade label: Professor J. SMITHS Etablissement for physiske, astronomiske og optiske Instrumenter / ved / J.E.A. Hansen / Pilestræde 113, ligefor Silkegaden / KJØBENHAVN
1868 (written in ink).

Lattice frame. Brass index arm L160. Limb Rad150 with silvered scale -3 to 149° in 20 min divisions. Vernier to 30 sec. Tangent screw and clamp. Reading telescope with two lenses. Threads for telescope sight. Three shades for index mirror. Same for horizon mirror. Telescope sight Dia20 L95. Pinhole sight, same dimensions. Mahogany case shaped and fitted 215x250x110

1502 (NYKØKATE). Galvanometer.
Signed: HM STRUERS
Made by Helweg-Mikkelsen, Copenhagen.
c1950 (g).
Microammeter. Black ebonite cabinet 90x112x40. Zero adjustment. Mirror scale 50-0-50

1503 (NYKØKATE). Resistance.
Signed: C.Weitzmann
c1900 (g).
Plug resistance box. Mahogany base 320x130x25. Reels of boxwood with

resistance wire. Brass conductors and plugs. Mahogany lid 270x70x50.
0, 0.2, 0.2, 0.5, 1, 2, 2, 5 Ω .

1504 (NYKØKATE). Resistance. Plug resistance box. As item 1503, except 1, 2, 3, 4, 10, 20, 30, 40 Ω .

1505 (NYKØKATE). Torsion balance.
Not signed.

Late 19th century (g).
Coulomb's. Glass cylinder Dia230 L230. Three brass feet with level screws. Glass cover in brass frame Dia270 with eccentric opening for electric charge on brass sphere Dia10. This is at lower end of brass rod Dia2 L170, adjustable in an insulating glass tube fitted into brass tube, fixed in boxwood plate 47x35, which is placed over the eccentric opening. Glass tube for torsion wire Dia30 H320. Brass suspension at the top with zeroing knob, scale 0-90-0-90°.

1506 (NYKØKATE). Piezometer.
Ørsted's instrument for water compression experiments.
Not signed (probably made at the workshops of the Polytechnical University of Copenhagen).
c1850 (g).

Glass vessel Dia100 H280 is fastened to wooden base plate 310x310 by a wooden collar Dia245 holding the foot of the glass. On the top of the glass is a brass cylinder Dia48 L130 and piston, which may be operated by a screw with crank. The internal manometer etc missing.
Ref: Meyer, vol II p 310.

1507 (NYKØKATE). Leyden jars.
Not signed.
Second half 19th century (g).

Battery of four. Softwood box 300x300-x120 with partitions. Each glass Dia120 H180, tin foil to H120. Ebonized lids, brass conductors, chain. Tin foil at the bottom of the box.

1508 (NYKØKATE). Kaleidoscope.

Signed: C. Weitzmann

Late 19th century (g).

Wooden base Dia145 and baluster turned pillar H200. Cardboard tube Dia82 L145 with fishskin cover. Eyepiece Dia45 L30. Brass collar with opaque glass behind which are S-shaped bits for forming the kaleidoscope images. Overall L225 H330.

1509 (NYKØKATE). Vacuum tube.

Not signed.

Late 19th century (g).

Upright pattern. Glass maximum Dia115 with fluorescent leaf and beetle. Boxwood base Dia90. Overall H410.

1510 (NYKØKATE). Thermopile.

Not signed.

Late 19th century (g).

Brass foot Dia75. Expandable pillar Dia9. 24 elements in brass fitting Dia24. On one side is a brass cone maximum Dia64 L115 minimum Dia25. On the other side is a brass cylinder Dia25 with dust cover. L80.

1511 (NYKØKATE). Vacuum tube.

Not signed.

Late 19th century (g).

To demonstrate momentum and kinetic energy of electron ray. Mill with four wings, presumably mica, rotates on a vertical axis. Excentric electron ray impinges on the wings. Symbols indicate front and back of the wings. Glass

tube Dia72. Boxwood base Dia85. Overall H250

1512 (NYKØKATE). Morse receiver.

Signed, stamped in wooden base: C.

Weitzmann

Late 19th century (g).

Wooden base 305x140x25. Brass base plate 260x80. Spring wound brass clock drive. Rotating brass plate regulator. Two coils Dia30 L70. Iron pillar and reel for paper. Overall H390.

1513 (NYKØKATE). Guinea and feather experiment.

Signed: C. WEITZMANN'S ETABL / HILLERØD

c1900 (g).

Brass fittings with stopcock and connection for suction hose. Glass tube Dia28. Overall L830.

1514 (NYKØKATE). Communicating vessels.

Not signed.

c1900 (g).

Boxwood base Dia90. Glass with (a) wide tube; (b) zig-zag tube; (c) tube with two spheres; (d) narrow tube. Overall H215

1515 (NYKØKATE). Balance.

Chemical.

Signed, trade label: No 9350 / Struers

c1930 (g).

Mahogany case with glass panels 310x205x330 on marble base with three brass screw level feet. Front of case elevates for opening. Brass beam L120 between pans; open triangular shape. Centre of gravity adjustable by moving weight up or down. Agate (or equal) knife edge bearings. Adjustment of tare. Weight riders placed on

beam by manipulation from outside.
Brass pans Dia68.

1516 (NYKØKATE). Theodolite.
Signed: E. Leybold's Nachfolger /
Coeln-Rhein
c1900 (g).

Iron tripod with brass screw level feet.
Telescope Dia23 L180. Fixed focus. Spirit level on the back. Circular scale for altitude Dia100 scale 0-90-0-90° in 1° divisions; vernier to 0.1°. Mounted on Y-frame on azimuth scale 0-360° in 1° divisions; vernier to 0.1°.

1517 (HAUCHCOL 132, AWH C4).
Communicating vessels.
Not signed.
c1800 (g).

Ebonized base plate 235x105x25 with two glass tubes Dia50 and Dia36 H300 in brass fittings connected by brass tube Dia10. The glass tubes are topped with brass collars, on which screws vertical brass cylinders Dia36 and Dia24, both H80. No pistons in these cylinders, but cork stoppers.

1518 (HAUCHCOL 256). Fire engine.
Model.
Signed: Geoe Adams / Fleet Street
London
c1790 (g).

Wooden box 325x133x96 painted green outside, red inside. Four wooden wheels Dia72. Two brass pumps Dia20 with pistons operated by chains. Water reservoir before the nozzle (air vessel). Overall H300.

1519 (HAUCHCOL 257). Fire Engine.
Model.
Not signed.
c1800 (g).

Wooden box 220x115x90 with lead lining. Two cylinders Dia20 with pistons, operated by see-saw levers. Four wooden wheels (one missing and one defective), bogie for two of the wheels. Thill missing. Overall H230.

1520 (SORØAKAD 259). Hydraulic press. Bramah's.
Not signed.

Mid 19th century (g).

Patented 1796. Wooden sectioned model. Base 700x400x200. On four pillars H800 is mounted a plate 470x460. Below this and with the pillars as guides, the movable plate is supported by a piston Dia80. A lever L800 operates the small Dia20 piston.

1521 (HAUCHCOL 276a, AWH G71).
Syphon. Reisel's.

Not signed.

c1800 (g).

Brass base Dia100, brass pillar H120 supporting egg shaped glass H170 maximum Dia10. At the top is a brass collar with brass syphon tube, leading from the bottom of the glass to a glass bowl Dia120 H65 placed at the table. Venting screw in the brass collar.
Ref: La Fond, II p 67.

1522 (HAUCHCOL 276b, AWH G70).
Syphon. Reisel's.

Not signed.

c1800 (g).

Mahogany base 325x160x40. Brass foot Dia100 with pillar and egg shaped glass Dia115 H180. Brass collar at the top with brass syphon tube from the bottom of the glass to a glass bowl Dia140 H70 on the table. The tube is supported by a brass pillar Dia7 between the glass and the bowl.

1523 (SORØAKAD 258). Hydraulic press. Bramah's.

Signed: G.W.KLEIN / KJØBENHAVN c1860 (g).

Mahogany base 390x260x75. Small brass cylinder with piston Dia8. Hand operated iron lever L400 supported by iron stand. The large cylinder is made of glass Dia80 H140 held between brass top and bottom by four long bolts. Two long iron pillars Dia20 H360 are guides for the lifting platform, and support the top, fixed iron plate. Brass tubes for admission of water.

1524 (HAUCHCOL 277, AWH G66).

Syphon. Three connected tubes, "Fraterna charitas".

Not signed.

c1800 (g).

Glass. Tubes Dia~6, connected to a glass sphere Dia50 at the top. Overall H350.

1525 (HAUCHCOL 278). Syphon fountain. "Sipho interruptus".

Not signed.

c1800 (g).

Domed glass cylinder Dia80-40 H400, brass collar with a long L800 straight copper tube, and a shorter L200, bent copper tube.

Ref: Van Marum, p 214 no 112. *Gehlers phys Wörterbuch* 5 B I Abt p 128 Fig 48.

1526 (HAUCHCOL 279, AWH G62).

Intermittant fountain.

Not signed.

c1800 (g).

A brass tray Dia220 D30 supports by four cabriole brass feet a brass collar with a Dia20 glass tube H290. At the top of this is a brass collar with four spouts holding a pear shaped glass vessel. The glass is closed at the top by a brass cap,

with venting screw. The whole stands in a sheet metal tray Dia320 D60.

Ref: La Fond, II pl 6 fig 4.

1527 (HAUCHCOL 280, AWH G56).

"Magic flask".

Not signed.

c1800 (g).

Glass flask open at the bottom and sealed into brass plate perforated by many small holes. Sealed at the top by a brass collar with handle and vent hole, to be covered by the thumb, when held. Maximum Dia88 H190.

1528 (HAUCHCOL 281, AWH G57).

"Magic can".

Not signed.

c1800 (g).

Sheet iron can Dia68 H200 with perforated bottom. Small spout with cork stopper. Handle. Black lacquered with foliage ornaments.

1529 (HAUCHCOL 282, AWH G60).

"Magic funnel".

Not signed.

c1800 (g).

Double walled sheet iron funnel maximum Dia105 L150. Black lacquered with foliage ornaments. Small vent hole for the space between the walls traps water when closed by the thumb.

1530 (HAUCHCOL 283a). Tantalus beaker.

Not signed.

c1800 (g).

Turned wooden base Dia105. Glass beaker maximum Dia108. Overall H170 with circular syphon glass tube, ending through the base.

Ref: G.Turner II, p 86 fig 7.

1531 (HAUCHCOL 283b). Tantalus beaker.

Not signed.

c1800 (g).

Turned wooden base Dia105. Glass beaker maximum Dia110; overall H170 with glass bell syphon.

1532 (HAUCHCOL 285, AWH G101).

Heron's fountain.

Not signed.

c1800 (g).

Turned wooden base Dia140. Glass sphere Dia145. Sheet metal neck Dia40 H260. Top part is broken.

Ref: G. Turner II, p 86 fig 8.

1533 (HAUCHCOL 286, AWH G102).

Heron's fountain.

Not signed.

c1800 (g).

Sheet iron. Two cylindrical drums Dia150 H130, connected by two tubes, Dia14 H300. With water in the upper drum, a fountain will appear from the lower, in which the water is collected. When all the water has been transferred from the upper to the lower drum, the whole apparatus is turned upside down.

Ref: Van Marum, p 215 fig 125.

1534 (HAUCHCOL 288, AWH G69).

Syphon.

Not signed.

c1800 (g).

In the form of two small glass barrels Dia45-30 L70. Oak base Dia115 H20.

1535 (HAUCHCOL 292, AWH A19, A20, A24). Cohesion plates.

Not signed.

c1800 (g).

(A19): Set of two brass cohesion plates Dia70. (A20): Set of two glass cohesion plates Dia100 in brass fitting. (A24): Stand for suspending plates; boxwood base Dia95; four brass rods Dia3 L190 support upper boxwood plate Dia75 with a hook.

Ref: Hauch, vol 1 p 13, pl 2 fig 12.

1536 (HAUCHCOL 294, AWH A22).

Cohesion experiment.

Not signed.

c1800 (g).

Two lead weight cylinders Dia25 H48 with brass rings Dia30 for suspension.

1537 (HAUCHCOL 295, AWH A21).

Cohesion experiment.

Not signed.

c1800 (g).

Two marble weight cylinders Dia50 H75 with brass rings Dia30 for suspension.

Ref: Hauch, vol 1 p 13, pl 2 fig 16.

1538 (HERLUFSH). Telescope.

Refracting.

Not signed.

Probably made by Merz & Mahler (inf), in which case it is from 1840.

Tube Dia125 (said to be 6 inch?), oak (probably veneer) L1750, supported in brass lattice, counterpoised. Equatoreal mounted. Declination adjustment, scale Dia190 with clamp and tangential screw, scale in 15 min divisions, two verniers to 15 sec diametrically opposite; reading telescopes missing. Clock or manual adjustment of right ascension; electric motor and gear train is probably the RA clock drive. Eyepiece Dia53 with fine adjustment screw. View finder Dia33 L370; no focusing. Heavy wooden base.

Originally at Gjorslev Manor, acquired 1856. Came to Herlufsholm 1925 (inf). Renovated October 1970 by HONI, fine mechanic industry, Næstved.

1539 (HAUCHCOL 297). Collection of ten glass capillary tubes, varying diameters.
c1800 (g)

1540 (HAUCHCOL 314, AWH G176 – as marked on the instrument, but the number does not conform with Hauch's inventory of 1827).
Langenbucher's electric hydrogen lamp.
Not signed.
c1810 (g).

Consisting of two glass vessels, the lower Dia115 H150, the upper more spherical Dia100. The glasses are joined by a brass connection with a nozzle outlet from the lower glass for hydrogen controlled by a stopcock. A spark gap in front of the nozzle has electrical connections to an electrophorous in the base; its brass disc is lifted by a brass wire to the stop cock handle simultaneously with the opening for hydrogen to the nozzle. The lower glass is filled with hydrogen which is kept under pressure by the water in the upper glass. Wooden base 210x210x95.

1542 (HAUCHCOL 321a, A64). Table.
Marble top.
Not signed.
c1790 (g).

Mahogany frame. 1990x890. Six feet H820 with iron levelling screws. Cushions like a billard are no longer there. The table has been used for demonstration with a moving Atwood fall machine (item 1543).

1543 (HAUCHCOL 321b, AWH A64).
Atwood's fall machine on wheels.
Not signed.
c1790 (g).

Mahogany base 490x330 with marble plate and four brass wheels Dia105. Fluted mahogany column Dia~60 H830, extended by column with cross section 25x25 to overall H1380. At the top is a dove-tail guide for a mahogany platform 215x210x15 with frictionless bearing as in no 1541 with four brass wheels Dia110 and pulley wheel Dia105. Boxwood scale 0-48 inches in 0.5 inch divisions with two brackets for brass plate Dia95 and ring. Little is left of pull and release mechanism underneath.

1544 (VESTAMTS). Level. Water.
Signed: Ingenieur Corps / No 3
Late 18th century (g).

Brass. Tube Dia22 L900 bent 90° at each end, continuing in glasstubes Dia20 L90. One of these is closed, except for a Dia5 opening. Brass cone for staff mounting. Dismantles in five parts. Fitted oak box 420x165x30.

1545 (HAUCHCOL 323, AWH A59).
Fall apparatus.
Not signed.
c1800 (g).

To show that a body requires the same time to fall along a vertical diameter and along a chord ending at the foot of the circle. Mahogany circle Dia1200, cross section 73x22. Brass mechanism for simultaneous release of two steel balls from the top of the circle and the top end of the chord (reconstructed). Three mahogany feet with levelling screws. Plumb bob.
Ref: Gli Strumenti p 313.

1546 (HAUCHCOL 324, AWH A60).

Triple tracks for fall experiment.

Not signed.

c1800 (g).

The three brass tracks are, (a) part of circle, (b) chord and (c) cycloid, all three starting and ending at the same points. Three wooden balls Dia12 and a brass plate with three fingers for simultaneous release of the balls. Mahogany base 630x115x45, overall H420.

1547 (HAUCHCOL 325, AWH A62).

Projectile trolley.

Not signed.

c1800 (g).

Demonstration of the free fall combined with a constant horizontal velocity. Mahogany platform L360 on four mahogany wheels Dia147. On the platform is a brass cup in which an ivory ball Dia40 can be placed. By a powerful leaf spring the ball can be ejected vertically upwards. The spring is released by a mechanism underneath the platform and initiated when passing an obstacle. The drive to the trolley is a spring mechanism under the platform, pulling a cord winding round a conical pulley, so as to change the driving force as the spring power diminishes. By constant velocity the ball should return to the cup after having been ejected.

Ref: Van Marum, p 155 fig 40 and 41.

1548 (HAUCHCOL 327, AWH A65).

Parabolic trajectory.

Not signed.

c1800 (g).

s'Gravesande's. Mahogany and fruitwood. Base 585x240 three wooden levelling screws. Vertical wooden plates, overall H370, one having a quadrant

shaped channel so that a ball may be released from the top, roll down and be projected horizontally. The resulting path of fall is a parabola on which two brass rings are placed for the ball to pass through.

Ref: Van Marum, p 153 fig 37.

1549 (SORØAKAD 328). Parabolic

trajectory of a falling stream of water.

Not signed.

Mid 19th century (g).

Black painted wooden base Dia110. Glass tube Dia40, broken so that height can not be determined. At the foot is a brass collar with an adjustable brass spout to vary the elevation of outrunning water.

1550 (HAUCHCOL 329, AWH A66).

Parabolic trajectory of falling fluid.

Not signed.

c1800 (g).

Mahogany tray 545x175x130 with white painted mahogany back plate H650 with drawn quadrant. A vertical glass tube Dia20 H400 has a funnel at the top and at the bottom an outlet tube at the centre of the quadrant. The elevation of the outlet is adjustable and the path of the fluid can be seen against the white back plate. For use with mercury.

The application of mercury in stead of water is probably invented by Ole Rømer: *Experimenta circa altitudines et amplitudines projectionis corporum gravium* in *Mem. de l'Acad. 1666-99, IV, Paris*, p711.

Ref: Pihl, p 37 ff.

1551 (HAUCHCOL 340, AWH A68).

Centrifugal machine.

Not signed.

c1800 (g).

Shaped mahogany table 900x630 on three turned mahogany legs. On a solid mahogany upright H1200 is mounted a mahogany drive wheel Dia400 on a horizontal axle. Cord drive to two vertical rotating axles on the table on which can be mounted different mechanisms to be rotated. These are, (a) mahogany board L760 with two ivory spheres of different mass, connected by a cord, to demonstrate angular momentum. (b) Mahogany board L760 with two ivory spheres of same mass, connected by a cord, to demonstrate angular momentum. (c) Mahogany board L760 with four slanting glass tubes to contain fluids and solids floating or sinking in the fluid during rotation. (d) Glass beaker, pear shaped Dia100 H150, closed by a sealed stopper, containing mercury and water. (e) Watt's centrifugal regulator, brass. (f) Mahogany board L760 on which a mass can move radially during rotation, connected by a cord to a mass moving vertically on an upright H400 at the centre of the rotation; its gravity will provide centripetal force for the radially moving mass. (g) Glass beaker H160 on brass foot. (h) Vertical, central iron rod with four steel springs forming a globe; the springs are fixed at the bottom, but can slide on the vertical rod at the top; for demonstration of the flattening at the poles of the earth due to the rotation. (i) Square wooden frame with suspended ivory ball to demonstrate Foucault's pendulum.

1552 (HAUCHCOL 347, AWH A70).

Centrifugal pump.

Not signed.

c1800 (g).

Working model. By Hauch named

Hesse's pump. Black lacquered sheet iron with gold painted edges. Cylindrical vessel Dia285 H80 continuing downwards in cylinder Dia205 H220. In this a system of bent, soldered tubes can be rotated by a crank on a vertical axle. The shape and slant of these tubes allows a fluid to be lifted from the middle of the bottom to the rim of the top by centrifugal force. A brass spout from the the upper cylinder rim leads the heavier fluid to a cylindrical vessel Dia150 H145 soldered to the outside, whilst the lighter part of the fluid remains at the bottom inside.

1553 (SORØAKAD 345). Gyroscope.

Signed: Julius Nissen.

c1860 (g).

Set of eight parts, not complete. Brass. Steel point on brass circular base. Five brass gyros of different sizes and mountings. Brass rods and bars for different experiments.

1554 (SORØAKAD 350). Pendulum.

Signed: C.F. OECHSLE /

PFORZHEIM

c1860 (g).

Triangular wooden base, side L550, with three wooden levelling screws. Mahogany column cross section 63x40 H1350. Brass bracket at the top with steel knife edge suspension for oxidized brass pendulum Dia12 L1300. This has two knife edges 140 mm from one end and 160 mm from the other for reversal of the pendulum. One brass weight Dia35 L50 outside the suspensions and two brass weights Dia25 L28 and L39 movable between the knife edges. Overall H1450.

1555 (SORØAKAD 355). Pendulum clock movement. Model.

Not signed.

Mid 19th century (g).

Black wooden base Dia110. Brass clockwork, front and rear mounting plates 93x62. Spring drive. A cord between the spring and the clock axle runs over a conical pulley to compensate for the slackening of the spring. Verge escapement. Brass pendulum L70. Covered by glass dome Dia90 H140.

1556 (HAUCHCOL 361, AWH A35).

Billard.

Not signed.

c1800 (g).

Wooden frame 760x380x50. Table top and cushions covered with green cloth. Six pockets with net.

Ref: Hauch, vol 1 p 20, pl 3 fig 6.

1557 (HAUCHCOL 362, AWH A45).

Rebound trajectory.

Not signed.

c1800 (g).

Mahogany base 480x270x50. Marble slab in mahogany frame 270x145, hinged at the short side and with elevation adjustable along a mahogany quadrant, to which it may be fastened in position by a brass set screw. No angular scale. Mahogany upright H650 with bracket L300, having a hole and sliding brass plate for a small ivory falling ball. After the rebound, the ivory ball is intended to hit an opening in a mahogany box on the foot of the upright.

1558 (HAUCHCOL 364, AWH B71).

Flexibility of cords apparatus.

Not signed.

c1800 (g).

Apparatus to demonstrate the flexibility of cords when wound around cylinders of different diameters. Mahogany base 490x215x35 on four feet. On this is a mahogany frame consisting of two uprights, cross section 82x33 H910 connected by mahogany girder L680. From this is suspended a mahogany swing 290x195x25 in two cords. Cylinders and weight pan are missing.

Ref: La Fond, Tome 1 pl XVII fig 5.

1559 (HAUCHCOL 366, AWH A50).

Friction machine.

Not signed.

c1800 (g).

Desagulier's. Small mahogany table Dia190. A brass flywheel Dia140 with steel axle resting on four brass wheels Dia80 as frictionless bearing. The flywheel is set in oscillating movements by a spiral steel spring with release catch. A brass lever arm L120 rests on the axle of the flywheel and can be loaded with weights. The friction of the lever upon the flywheel axle determines the number of oscillations.

Ref: Van Marum, p 158; Hauch, vol 1 p 34, pl 5 fig 8.

1560 (HAUCHCOL 367, AWH A51).

Friction machine.

Signed: Le Cape- d'Arte de Montville, Ingr Mechn Invenit & Fecit Copenhagen

c1800 (g).

Montville's. Mahogany base 350x117. Uprights H190 carry bearings for two brass wheels Dia114, which again support the axle of a mahogany flywheel with steel in its periphery for inertia. This axle is pressed down by rollers Dia~12, mounted in a brass bearing-

house; the pressure, hence the friction, being adjustable by tightening finger screws.

1561 (ROSKKATE). Tantalus' beaker. Not signed.

Mid 19th century (g).

Glass, 6 mm thick, Dia135, H220. Glass base Dia135. Glass tube from the bowl through centre of base; siphon bell glass missing.

1562 (ROSKKATE). Archimedes' spiral.

Not signed.

Mid 19th century (g).

Sheet iron painted black. 245x105x130, standing on four feet. The spiral Dia75 has ten turns. The elevation adjustable by a brass arc, at the upper end supporting the axle and at the lower end fixed in desired position by a set screw. Overall H240.

1563 (ROSKKATE). Worm drive.

Not signed.

Mid 19th century (g).

Mahogany axle Dia9 with pulley Dia50. The mahogany threads are engaged in threaded brass gear Dia54 on common axle with mahogany pulley Dia16. Supported by wooden uprights. Wooden base 155x80.

1564 (ROSKKATE F 146). Gear mechanism.

Signed: Cornelius Knudsen / Hof-Instrumentmager / København
c1900 (g).

Two brass gears Dia45 and Dia18 with mahogany pulley. Two mahogany uprights. Mahogany base 200x125x20. Overall H380.

1565 (ROSKKATE). Singing flame apparatus.

Not signed.

c1900 (g).

Four vertical brass tubes ending at the top in a nozzle for gas outlet. Provision for four (glass?) tubes to be placed over the nozzles; the tubes are missing. Overall H475. Brass base Dia155 with hose connection for gas.

1566 (ROSKKATE). Winch. Model.

Signed: Instrumentfabriken / "Fysik" Hillerød / ERIK WEITZMANN
c1925 (catalogue).

Iron base 150x100x15. Two brass uprights Dia10 H335 supporting ebony pulleys Dia60 and Dia20 on the same steel axle. Brass crank. Brass pan Dia33. Overall H375.

1567 (ROSKKATE). Cock model, to show the bores of the plug in three-way and four-way cocks.

Not signed.

19th century (g).

Boxwood. Dia125 H25.

1568 (ROSKKATE). Cube, 1 cubic decimetre.

Not signed.

c1910 (g). Wood 100x100x100. On two sides marked with squares at 1 sq cm. On three sides painted white and marked (a) 1 Kub Ctm = 1 Gram = 10 Decigram = 100 Centigram = 1000 Milligram = 1/5 Kvint; (b) 1 Kub-decimeter = 1000 Kub-centimetre; (c) 1 Liter Vand 4° cels veier 1 Kilogram = 1000 Gram = 2 Pund. Fits exactly in hollow painted brass cube.

1569 (ROSKKATE). Cube, 1 cubic decimetre.

Not signed.

c1910 (g).

Educational. Sheet iron case 100x100x100 with nine wooden plates 100x100x10, seven wooden staves 100x10x10, one stave 100x10x10 painted red and white showing cubic centimetres, 10 red and 10 white cubic centimetres.

1570 (ROSKKATE). Steam engine with boiler.

Not signed.

Second half 19th century (g).

Wooden base 960x370x190. Copper boiler Dia300 H450 with water level gauge; safety valve (weight missing); pressure gauge, scale 0-3 "Atmosphären" (marked with crowned eagle); steam whistle. Single cylinder engine on base 400x145, flywheel Dia280, steam valve, eccentric, slide valve, centrifugal controller operating the steam valve.

1571 (ROSKKATE RKSF 172). Eye model.

Not signed.

Second half 19th century (g).

Pear shaped wood L115 maximum Dia95 with brass draw tube Dia45 L~80. Eye lens Dia32 with painted iris. Eye lid with eye lashes. One convex and one concave spectacle lens, mounted on hinged arms, can be placed before the eye. Supported by metal pillar Dia12 on metal base Dia90. Overall H275.

1572 (ROSKKATE RKSF 138).

Galvanometer. Educational.

Signed: Instrumentfabriken / "Fysik" Hillerød / ERIK WEITZMANN c1930.

Mahogany base 150x85. Coil 120x15, silk insulated wire. Arbitrary paper scale +/-5.

1573 (ROSKKATE). Voltmeter.

Signed: P.BROCK & Co / KØBENHAVN / 4a / 28143

c1900 (g).

For laboratory use. Cast iron base and stand. Brass instrument case Dia90 H30 with eccentric scale 0-10 V.

1574 (ROSKKATE). Barometer.

Aneroid. Educational.

Signed: C.WEITZMANN

Late 19th century (g).

Single bellows Dia45. Brass mechanism with zero adjustment against a helical spring. Scale Dia80, 67-79 "Meter" (sic), 76 is marked "Foranderligt" (Changing). Also a scale 25-29 inches, 28 1/12 inch at "Foranderligt". Memory pointer. Danish text. Written note "Par. Tommer".

1575 (ROSKKATE). Glass instrument, use not known.

Not signed.

c1900 (g).

Glass base Dia46. Upon this is a glass stem Dia10 H150 with inlaid paper scale 0-8 in 1/20 divisions, terminating at the top in pear shaped glass bulb maximum Dia45 H70 with a glass hook at the top, so as to support the whole instrument in a string. Overall H250. The paper scale is marked "Waage nach Bardeleben".

1576 (METEINST 689). Compass.

Variation.

Not signed (probably G.F.Branden).

Mid 18th century (g).

Marble quadrant base, H14 Rad365 with five holes for mounting. Compass house mahogany 240x69x65 incl glass lid. Ivory inlay with line for meridian. Sideways screw adjustment for pivot. Brass fittings. Two columns Dia25 H125 with screws. Pillar with pinhole sight. Brass scales 0-75° and 0-45°. One ivory scale 0-20°. Plumb bob. Wooden case shaped 550x410x130, leatherbound, brass handle, red canvas lining.

Attached label: "Old Declinatorium".

1577 (METEINST). Spectroscope.

Signed: Otto Toepfer / POTSDAM c1890 (fl 1873-1919).

For aurora borealis. Brass house for prism Dia150 H95. Two interchangeable prisms single and compound. Two interchangeable collimator tubes Dia54 L100, one with adjustable slit with micrometer to 0.01 mm and screen for trisection of slit. Rack and pinion focusing. Wooden box 500x350x340, fitted.

Attached label: "Used by Adam Poulsen" (1833-1907, director of the Danish Meteorologiske Institut).

1578 (METEINST). Magnetometer.

"Kohlrausch Lokalvariometer".

Not signed by maker.

Mid to late 19th century (g).

Compensation type. Unifilar suspension in tube Dia13 L160 with zero adjustment at top. Four compensation magnets on a turntable with scale 0-360° in 2° divisions; vernier to 0.2°. Telescopic sight with rack and pinion focusing and counterbalance. For stand mounting, stand missing. Oak box, fitted, 280x520x350.

1579 (METEINST 660).

Dipping circle.

Signed: Buzengeiger in Tübingen c1820 (Wilhelm Gottlob Buzengeiger fl).

Brass tribrach with level screws. Brass scale Dia250 with magnetic needle L215 cross section about 90x5. Graduated 0-90-0-90° in 15 min divisions. Two verniers to 1/24 (?). Magnifiers, spirit level. Compass needle with weight for dip compensation in brass house 155x27x17. Overall H350. Wooden box, fitted 320x260x430.

1580 (METEINST). Hygrometers.

Two. Hair.

Not signed (probably made in own workshop).

c1900 (g).

Two brass pillars L280 spaced 40 mm, connected by a yoke on which is mounted a pulley with a counterpoised hair. Index L140. Brass scale 0-100, non-linear L150. Marked on attached label "Model La Cour". (Dan la Cour, 1876-1942, director of Danmarks Meteorologiske Institut). Fir and plywood box 320x165x35.

1581 (METEINST). Thermograph.

Bimetal.

Signed, plaque on the lid: Brevetés 3600 / RF / Paris / 39056 (engr in brass base). CORNELIUS KNUDSEN / KJØBENHAVN c1900 (g).

Measuring element in metal net cage Dia80 L115. Brass mechanism. Pointer L140 with pen writing on drum.

Dia95 L85. Seven day chart, scale 83 mm, no units. Spring wound clock. The cover has glass front. Four sides of the

house opens up. Carrying handle.
Overall 1340.

1582 (METEINST). Chronograph.
Signed, stamp in the brass base: BRE-
VETÉS / RF / PARIS
Signed on plaque on the lid: CHRO-
NOGRAPHE ENREGISTREUR / Anc^{ne}
M^{on} RICHARD FRÉRES / JULES
RICHARD SUCCR / CONSTRU-
CTEUR BRÉVETÉ S G c G / 25 RUE
MÉLINGUE 25 / PARIS
c1885 (fl).

Mahogany case with glass front 320x140-
x250. Cylinder with graph paper Dia90
L145. Spring clock drive moves the
cylinder and two pens, which ascend by
11 mm at one rotation of cylinder in 24
hours. Two coils for activating the pens.

1583 (METEINST). Spectroscopes.
Six.
Not signed (probably made in own
workshop).
c1930 (used on Thule expedition
1932-33).
"MODEL LA COUR" for aurora borealis.
Direct vision for hand holding.
Brass tube Dia19 L63, expanded L80.
The eyepiece contains prism and mag-
nifier focusing on slit in the outer tube.
Fitted wooden box with artificial shark
skin, lined with coloured felt.

1584 (METEINST). Polarimeter.
Signed: Photo Polarimètre de M
Cornu / M. Cornu / M^{on} Jules Duboscq
/ Ph. Pellin / Paris
c1885 (fl).
Brass tube Dia28 L310. Three slits.
Rotatable brass tube L40 with a Nichol
prism and silvered scale 0-360° in 1°
divisions. Seems to be incomplete.

1585 (METEINST 650). Telescope.
Refracting.
Signed: G.W.KLEIN / MECHANICUS
& OPTICUS / No 29 St Strandstræde
No 29 / Kjöbenhavn
c1880.

Brass base with azimuth scale. Spirit
level for brass bar supporting the tube
for altitude measurement, as transit
instrument. Brass tube Dia29 L300 with
counterpoise. Objective Dia35 with
push fit dustcover. Eyepiece Dia20 L35,
rack and pinion focusing. No scales.
Used at the Dijmphna-Expedition
1882-83. Fitted mahogany box 405x
350x135.

1586 (METEINST 630).
Magnetometer.
Signed: G.W.KLEIN / MECHANICUS
& OPTICUS / No 29 St Strandstræde
No 29 / Kjöbenhavn
c1880.

Parts to be used in connection with
other instrument, suspension tube,
magnet house, deflector brackets etc.
Mahogany, fitted box 650x285x140.

1587 (METEINST). Lloyd balance.
Signed: V. FALCK RASMUSSEN /
KJØBENHAVN.
c1900 (g).
For vertical magnetic field. Brass base
Dia50. Brass pillar Dia15 H50. Brass
house 105x60x75 with glass front and
rear. Balance beam L90, agate pivot.
Zero adjustment by brass weight screws.
Mirror reading through prism on the
top of the house. Thermometer mis-
sing.
Ref: E. Mascart, *Traité de Magnetism terre-*
stre, Paris, 1900, p 197.

1588 (METEINST). Z-variometer.

Signed: EDELMANN / MÜNCHEN
c1900 (g).

Brass ring Dia220 on three adjustable brass feet supports marble base Dia215 H50. Tube shaped magnet is suspended in brass housing and pivoting on a horizontal axis. Zero adjustment by brass screws. Prism for total reflection on top of the house for observing equilibrium.

1589 (METEINST). Magnetic balance (BM-magnetvægt).

Not signed.

Made by: Andersen & Sørensen, Copenhagen (inf).

c1900 (g).

Oxidized brass tripod with level screws. Upon this the instrument can turn in azimuth, but no scale. Spirit level. Suspension tube Dia20 L250. Thermometer -2 to 36°. Sighting telescope Dia22 L250, with scale built into the optic system. For measuring Z, vertical intensity. Said to be forerunner for the BMZ invented later by DMI.

1590 (METEINST). Magnetometer.

QHM.

Not signed.

1934 (inf).

Quartz Horizontal Magnetometer. According to attached label is this the first QHM, La Cour's Prototype. Brass base Dia55. Copper house Dia45 H55. Suspension tube Dia22 L200. Torsion head with scale 0-360° in 10° divisions. Made in own workshop (inf).

1591 (METEINST). Vertical-intensity magnetometer, "Vendeapparat".

Not signed.

c1920 (g).

La Cour's first invention for induction coil mounting when determining the vertical (and later horizontal) intensity of the geomagnetic field by changing the position of the rotating coil by 180°. Marble base 240x260x40 on three brass feet. Brass mechanism for manually turning a coil 90°. Eight terminals for electricity.

Ref: D.la Cour, Om et nyt Apparat til jordmagnetiske Maalinger, in *Fysisk Tidsskrift*, 1927, p 105-114.

Made by Andersson & Sørensen, Copenhagen (inf).

1592 (METEINST). Vertical-intensity magnetometer, "Vendeapparat", La Cour's.

Signed: ANDERSSON & SØRENSEN / KØBENHAVN

c1925 (g).

For magnetic field determination by rotating coil. Newer version of item 1591. Black brass basis Dia325 H25. Three level screws. Brass house Dia200 H90. Can rotate about a horizontal diameter. Spirit levels on bottom and side of the house. By clamps the instrument can be made to rotate with the axis vertical. Electric connections. Made for Magnetic Observatory, Godhavn, Greenland, founded 1926.

Ref: see item 1591.

1593 (METEINST). Inclination meter.

Signed: EDELMANN / MÜNCHEN
c1920 (g).

Weber's electrodynamical. Open triangular brass base, sides 400x400x300, cross section 30x16. Upon this is a vertical brass semicircle Dia250, cross section 30x25 which can be tipped 90° in its own plane. In the circle is mounted a

double coil of rather thick wire. Coil Dia165. The coil can be made to rotate around a horizontal or vertical axis, pending the position of the brass semi-circle.

Ref: E. Mascart, *Traité de Magnétisme Terrestre*, 1900, p 169ff

1594 (METEINST). Dipping circle.

Signed: John Dover Charlton Kent Circle No 59

c1910 (g).

Inclination meter. Brass tribrach with levelling feet. Silvered circular azimuth scale 0-90-0-90° in 30 min divisions. Clamping and tangential screw. Upon this is an altitude circle Dia130, silvered scale 0-90-0-90° in 30 min divisions, with two verniers to 1 min; magnifier; clamp and tangential screw. On the back is a mahogany house 130x160x45 with glass front and back, holding the dipping needle. Fitted mahogany box 225x290x210 with leather strap.

Ref: E. Mascart, *Traité de Magnetisme Terrestre*, 1900. p 168.

1595 (METEINST). Earth inductor, or inclinometer for measuring dip.

Signed: Edelmann München

c1890 (g).

Originally located in building 2 in Rude Skov Observatory. Induction coil Dia100 brass frame with double coil of thin wire. Rotatable about a coil diameter by means of a flexible shaft L900 with crank. Commutator for connection to galvanometer. The inclination of the rotation axis is adjustable, scale 0-360° in 20 min divisions; two reading telescopes with vernier to 2 min. Galvanometer reading will be zero with rotation axis in line with the magnetic

meridian. Three level adjustable feet, marble plate base plate.

1596 (METEINST). Galvanometer.

Signed: Physikalisch-mech Institut von / PROF. DR.M.Th.EDELMANN / MÜNCHEN

c1890 (g).

Astatic moving magnets, reflecting. Originally located in building 2 in Rude Skov Observatory. Suspension tube Dia14 L450. Choice of connection to two coils, 16.6 and 16.7 Ω. Three adjustable level feet. Separate reading telescope.

1597 (METEINST). D-variometer.

Signed: Physikalisch-mech Institut von / PROF. DR.M.Th.EDELMANN / MÜNCHEN

Signed on the telescope: CORNELIUS KNUDSEN

c1890 (g).

Originally located in building 2 in Rude Skov Observatory. Brass ring base Dia225 with three levelling screws. Upon this a circular block of marble Dia210 H50. Rotatable brass table Dia180 with azimuth scale 0-360° in 0.5° divisions; vernier to 0.5 min; clamp, tangential screw and magnifier. Mirror housing 80x95x105, glazed for mirror reading. Above the mirror is a tube-shaped magnet Dia~10 L~90. Suspension tube Dia36 H650. Separate unit of light source, telescope and scale.

1598 (METEINST). Z-variometer.

Not signed. Designed by J. Egedal, and probably made by Læssøe-Müller, Copenhagen (inf).

Telescope signed: CORNELIUS KNUDSEN.

c1920 (g).

Originally located in building 2 in Rude Skov Observatory. Brass tribrach with levelling feet. Circular brass plate Dia110 with azimuth scale 0-360° in 0.5° divisions; vernier to 0.5 min. Tangential screw. On two brass supports is a horizontal brass cylinder Dia65 L120 with circular window at the middle; vial with silica gel for drying connected to the cylinder end. Thermometer -15 to +27° in 0.2° divisions. Separate illuminated scale and telescope.

1599 (METEINST). Variation meter. (a catalogue from Carl Bamberg, Berlin-Friedenau, calls a similar instrument: 'Magnetischer Theodolit')

Not signed.

c1900 (g).

Originally located in building 3 in Rude Skov Observatory. Brass ring base Dia190 with three levelling feet. Rotatable brass table Dia190 with azimuth scale 0-360° in 10 min divisions; telescope reading with micrometer. Mounted with sighting pole (mire) in 600 m distance in the geographical meridian (south) and a dormer window. Telescope with vertical double line for sighting the mire. Suspension of magnet in Dia20 H380 brass house determining the magnetic meridian. This instrument is known as the Bamberg magnetic theodolite. Fitted wooden box 380x310x420.

Ref: S.Chapman & J.Bartels, *Geomagnetism*, vol 1 p 36ff, Oxford, 1940.

1600 (METEINST). Dipping needle.

Signed: G.W.KLEIN / KJØBENHAVN

c1900 (g).

Originally located in building 6 in Rude Skov Observatory (stolen June

1993, but similar, smaller instrument extant). Brass base Dia80. Oxidized brass support, containing mechanism for lifting the needle by turning a knurled knob. Cylindrical brass housing Dia145 H38 with glazed front. Needle L110 on agate bearing. Silvered scale at back of the case 0-90-0-90°.

Note: Following numbers 1601-03 are connected to a common photographic recording instrument, made by Edelmänn.

1601 (METEINST. Rude Skov.

Signed: Physikalisch-mech Institut von / PROF DR M.TH. EDELMANN / MÜNCHEN

c1900 (g).

Located in Building no 1, subterranean vault). Variometer for horizontal component. Brass ring base Dia230 with three levelling feet. Upon this is a marble block Dia215 H50. Rotatable brass plate Dia160 with azimuth scale 0-360° in 0.5° divisions; vernier to 1 min ; magnifying glass. Mirror housing 95x80x105. Above this is a circular plate Dia150 horizontally adjustable to four positions at right angles. Above this a cylindrical housing with suspended tube-shaped magnet, thermometer and glass with silica gel. Suspension tube Dia35 H650. Placed on concrete pillar and marble plate.

1602 (METEINST. Rude Skov. Located in Building no 1, vault). Magneto-graph, La Cour's.

Not signed .

Made by Andersson & Sørensen, Copenhagen (inf).

c1930 (g).

Variometer for vertical component. "La

Balance de Godhavn", produced for the observatory at Godhavn, Greenland. Brass base Dia160 with three leveling feet and a glass cylinder Dia145 H50 with magnetic needle L60 moving in the vertical plane. Upon this a black lacquered brass housing Dia160 H70 with prism for reflecting horizontal ray of light to the magnetic needle; glass lid.

Ref: *La Cour, La Balance de Godhavn*, Publ. No 8, 1930.

La Cour, og V. Laurusen, La Variometre de Copenhagen, Publ. No 11, 1930

1603 (METEINST. Rude Skov. Located in Building no 1, vault). Variometer for declination.

Made by Physikalisch-mech Institut, Professor Edelmann, Munich (inf). c1900 (g).

Same instrument as no 1601, except: the suspension can be rotated so that the torsion compensates for declination; Dia105 brass scale 0-360° in 1° divisions.

1604 (METEINST). Telescope. Refracting.

Signed: GILBERT & CO LONDON c1825 (fl).

Terrestrial. Brass tube Dia75 L1225. Objective Dia67. Eyepiece Dia45 L340; rack and pinion focusing. Erecting lens system. Two Huyghen's oculars. Sunshade. Dust cover missing. Viewfinder Dia30 L250. Three cabriole folding feet. Brass pillar H350. Mahogany box, fitted, 1170x235x120.

1605 (NORDFOLK). Electrostatic generator. Wimshurst.

Signed: C. WEITZMANN'S EFTE / HILLERØD-KØBENHAVN c1910 (g).

Mahogany base 450x230x30 on four turned feet. Two A-supports H330 for the axle with two rotating glass plates Dia370, 24 tinfoil strips with brass knobs (most of them missing). Two Leyden jars Dia35 H190. Conductors supported by ebonite pillars.

1606 (NORDFOLK). Air pump. Vacuum.

1920.

Iron base 480x210. Iron upright H370 support for lever-handle L300. Brass cylinder Dia50 L200. Steel piston rod; stuffing box with oil fill. Glass plate Dia180. Journeyman's probation, awarded silver medal (inf, attached label).

1607 (NORDFOLK). Air pump. Vacuum.

Signed: Fra Prof Smith's Fabrik i Kiøbenhavn c1820 (g).

Double barrel, Dia60 L200. Pistons operated by reciprocating rack and pinion; guides in a yoke L280 on two brass pillars with urn finials. Brass valve. Mercury manometer, scale 0-3 inches in 1/12 inch divisions; covered by glass dome Dia34 H200. Stop cock to glass plate Dia275. With mounted guinea and feather tube Dia30 H700 with brass fittings.

1608 (NORDFOLK). Silk winder. c1880 (g).

(For winding silk from cocoons for insulating copper wire). Wood. Base 780x190. Upright H620. Six wooden spokes rotated by a pulley have ends for holding the silk threads. Belonged to the instrument maker C. Weitzmann, who held silk worms.

1609 (NORDFOLK. 279-1985).

Nest of weights.

Not signed.

c1800 (g).

Bell metal. Maximum Dia45 minimum Dia26 H28. The lid marked "H 16". The cups marked: 4,2,1¹/₂,Q. The smallest weight is missing.

1610 (NORDFOLK. 279-1985).

Balance.

Not signed.

c1800 (g).

Iron beam L260 with swan's neck pivots. Brass pans Dia135 suspended in three cords. Gallows H120 with coarse knife edge for the beam pivot.

1611 (NORDFOLK). Thermometer.

Not signed.

c1900 (g).

Soft wood board 690x105x25. The scale difficult to read, but seems to be -5 to +40; no figures or text legible. The glass tube Dia8 H480 with a sphere Dia55 below. Spirit fill. Allegedly from Weitzmann's workshop, but seems too primitive to have been for sale.

1612 (NORDFOLK). Set square.

Not signed by maker.

1765.

Brass. Cross section 18x3. L105 and L153 engraved 1 to 5 inches divided in ¹/₂ inch divisions; on the other side engraved "PEDER IENSEN ANNO 1765".

1613 (NORDFOLK. 2-1949).

Measures. Length.

Not signed by maker.

c1900 (g).

Printed paper, strengthened by linen. All are marked 1,2,3,...46,47,48,0 followed by an empty space giving the

length of the tape in centimetres, the shortest 25, the longest 60 centimetres. Wooden box L695 W28 minimum H15 maximum H45. Hinged lid on the sloping side, but not to the full length of the box.. Hole for suspension of the box with the narrow end at the top, so that the lid may be opened to take out any of the measures. Probably tailor's measures?

1614 (NORDFOLK. 10-34). Scale.

Not signed.

Late 19th century (g).

Bow-spring. Iron with brass scale. L280. Two hooks and two scales, 0-32 DAE-NISH and 20-0-200 DAENISH.

1615 (NORDFOLK. 1201 and 1202-1923). Chondrometer.

Signed: D.F.Ehlers. Hamburg.

c1870.

Two brass weighing pans Dia65 H73 and Dia63 H84. Marked at the bottom "D.F.Ehlers. HAMBURG. Justierte Nor...waage der Hamburger Börse". Brass weighing beam L103. Box pivots at beam ends. Gallows with pointer L40. Ring for hand holding. Measure beaker max Dia70 min Dia48 H100. Latch for opening the bottom. Marked "D.F.E."

Weights, cylindrical: 60,40,20 and 10, marked R1868; square: 5,4,3,2 marked R1863.

1616 (NORDFOLK. 9 and 15-30).

Chondrometers. Two.

Signed: F.A.THIELE / KIØBENHAVN

c1900 (g).

Brass pan Dia70 H140 with lid; suspension cords missing. Two balance beams with sliding weight (steelyard principle); scales 60-145 P and 6-15 Lp.

1617 (NORDFOLK. 53x25). Measure.
Volume.
1791.

$\frac{1}{2}$ Pot. Pewter. Dia75 H150 with handle and lid. Marked crowned "C5", three towers, "1791" and (on the rim) "K", indicating that it was certified in Copenhagen.

1618 (NORDFOLK. 53-24). Measure.
Volume.
1823.

1 Pægl. Pewter. Dia60 H115 with handle and lid. Marked crowned "C5", three towers, "1823" and (on the rim) "K".

1619 (HAUCHCOL 370, AWH A47).
Windmill. Double.
Signed with ink at the bottom: "1828 Jav". This can not refer to the date of manufacture, as the instrument is mentioned in Hauch's inventory of 1827.

c1800 (g).
Mahogany. Base 350x135x55. Three pillars support two eight-vaned mills Dia290, one with the vanes oriented to strike the air broadsides, the other edgewise. A brass spring and catch start both mills. In vacuum both mills will revolve for the same length of time, not so in air.

1620 (HAUCHCOL 368, AWH A51).
Roller bearing.
Not signed.
c1800 (g).

Pulley. Turned fruit wood. Dia230 H35. Grooved edge. At the centre is a brass boss with six brass cylinders forming a roller bearing.
Ref: Hauch, vol 1 p 105, pl 17 fig 9.

1621 (HAUCHCOL 404b, AWH H7).
Sonometer.

Not signed.

c1800 (g).

Mahogany resonance box 1195x120x52, spruce board with three star shaped sound holes. Two mahogany feet W438. Overall H540. Brass fittings, three pulleys Dia45 and hooks. Two fixed and one movable bridge. No length measure.

1622 (HAUCHCOL 404c, AWH H8).
Sonometer.

Not signed.

c1800 (g).

Resonance box open below. Softwood board 920x180; pine sides 920x120; oak ends 165x120. Four brass pulleys Dia40 and four iron hooks. No length measure. Bridges gone.

1623 (HAUCHCOL 412, AWH H14).
Megaphone.

Not signed.

c1800 (g).

Black painted sheet iron. Maximum Dia150 minimum Dia26 L540. Golden foliage ornaments.

1624 (HAUCHCOL 411, AWH H15).
Ear trumpet.

Not signed.

c1800 (g).

Sheet iron, not decorated. Visible solderings. Maximum Dia100 minimum Dia6 L290.

1625 (HAUCHCOL 436, AWH H16).
Ear model.

Not signed. (Probably made by Johan Adam Schwartz, Copenhagen).

c1800 (g).

Ivory. Base Dia60. Three spirals Dia3 form the pillar Dia~20. The ear model is about natural size. Defective.

1626 (MEDISHIST 2.335).

Microscope. Culpeper type.

Signed: J. Bidstrup London
c1790.

Brass. Three S-shaped supports of the stage and three above the circular stage supporting the tube. Substage concave mirror. The stage has slits for fish-plate; mounting holes for condenser lens and tweezers; provisions for Bonanni spring and conical diaphragm. Tube with nose piece and eye piece. Push fit focus. Wooden base with drawer for accessories: four objectives, Lieberkuhn mirror, six ivory bars with specimens etc.

Ref: Moe, p 66f

1627 (HAUCHCOL 455, AWH F8).

Mirrors. Angled.

Not signed.

c1800 (g).

Two hinged mahogany frames 335x-160x12 with plane mirrors. To place on mahogany quadrant Rad365 with 0-90° scale.

1628 (HAUCHCOL 440A, AWH F1).

Projection screen.

Not signed.

c1800 (g).

Wooden frame 626x626x17 supported by expandable mahogany pillar. Fixed in position by wooden set screw. Mahogany tripod with curved feet. Minimum H1600, maximum H2200.

1629 (HAUCHCOL 490, AWH F4).

Eye model.

Not signed.

c1800 (g).

Brass. Sphere Dia78 with convex eye lens Dia40 and tubular extension Dia50 L140 with frosted glass plate mounted in draw tube. Two brass framed lenses Dia50 mounted on rotatable arms can be placed as spectacles before the eye lens. All supported by brass pillar Dia11 on brass base Dia100.

1630 (HAUCHCOL 443, AWH F5).

Screens for optic experiments. Three.

Not signed.

c1800 (g).

Sheet iron 340x250 vertical. Wooden feet, consisting of wooden screw and wooden nut 70x70x30. Dia10 mm aperture at the centre of each screen. Black painted with golden edges and motifs.

1631 (HAUCHCOL 440, AWH F38).

Screen.

Not signed.

c1800 (g).

Sheet iron, black painted with golden edges. 340x250. Wooden handle for hand holding. At the centre is a row of eight apertures Dia8.

1632 (HAUCHCOL 448). Screen.

Threedimensional magic viewer.

Not signed.

c1800 (g).

Oval shaped sheet iron 320x205 with wooden handle. Painted black. Two view holes with red and blue glass in eye distance.

1633 (HAUCHCOL 495, AWH F11).

Polemoscope.

Not signed.

c1800 (g).

Wood and pasteboard covered with col-

oured paper. Wooden turned oculars (one is missing). Tubes, cross section 30x30. Turned wooden handle. Overall 165x115x30.

1634 (HAUCHCOL 495, AWH F12).
Polemoscope.
Not signed.
c1800 (g).
Wood. Shaped. Overall 220x100x30.

1635 (HAUCHCOL 467, AWH F16).
Mirrors. Pyramidal. Two.
Not signed.
c1800 (g).
Metal. Base 80x80 H70. Anamorphic drawings. Shaped oak box, lined with green material.

1636 (HAUCHCOL 462, AWH F17).
Mirror. Concave.
Not signed.
c1800 (g).
Dia240. Black wooden frame mounted in brass stirrup. Cast iron tripod. Overall H465.

1637 (HAUCHCOL 460, AWH F19).
Mirror. Concave.
Not signed.
c1800 (g).
Dia240. Black (perhaps dark green) wooden frame mounted in stirrup. Turned wooden base Dia305. Mirror broken, but repaired.

1638 (HAUCHCOL 461, AWH F20).
Wooden case with hanging painted plaster bust for projection by concave mirror.
Not signed.
c1800 (g).

Hauch's description mentions a bouquet of flowers. This has probably later been replaced by the bust (looking like Voltaire). Overall H500.

1639 (HAUCHCOL 460, AWH F19).
Mirror. Concave.
Not signed.
c1800 (g).
Dia240. Black (perhaps dark green) wooden frame mounted in stirrup. Black wooden pillar and tripod. Overall H1220.

1640 (HAUCHCOL 458).
Kaleidoscope.
Signed: C & F DARKER / Patentees / London
c1820 (g).
Brass. Dia45 L170. 30° angled mirror. Mounted on brass pillar Dia20 with folding tripod, cabriole feet. Overall H290.
Ref: Hauch, vol 2 p 75, pl 23 fig 1.

1641 (HAUCHCOL 463, AWH F18).
Mirror. Convex.
Not signed.
c1800 (g).
Dia250. Black wooden frame mounted in brass stirrup. Iron pillar Dia11 H250. Wooden turned base Dia190. The base is probably not original. Hauch's description states for this number an 18 inch mirror.

1642 (SORØAKAD 464). Mirror. Cylindrical.
Not signed.
Mid 19th century (g).
Rad~400. Glass. In black painted wooden frame 245x192.

1643 (HAUCHCOL 465, AWH F21).
Mirror. Cylindrical. Anamorphic.
c1800 (g).
Brass. Dia30 H60 with turned wooden
top. Overall H80. Set of six anamorphic
drawings, numbered, 190x180.
Drawings signed: I.M.Burucker del. sc.
et exc.

1644 (HAUCHCOL 466, AWH F15).
Mirror. Prismatic, angled at 60°.
Not signed.
c1800.
Each side 120x80. Wooden top and
base. Four drawings.

1645 (HAUCHCOL 468, AWH F22).
Mirror. Conical.
c1800 (g).
Metal. Base Dia80, H70. Anamorphic
drawings. Turned, shaped wooden box.
Drawings signed: fig. fac. Aug. Vind

1646 (HAUCHCOL 496, AWH F26).
Optical toy.
Not signed.
c1800 (g).
Prismatic viewer of anamorphic
drawing. In the shape of a microcope.
Vertical mahogany tube Dia45 L120
with octagonal pyramidal prism at low-
er end and aperture for viewing at the
top. Supported by shaped mahogany
stand on mahogany base 200x160 on
which can be placed anamorphic
drawing.

1647 (HAUCHCOL 472, AWH F37).
Newton's prism experiment.
Not signed.
c1800 (g).
Right, three-sided glass prism 26x100
in brass fitting, mounted horizontally

on expandable brass pillar Dia8 sup-
ported on a horizontal bar, movable,
held in position by set screw. At the
opposite end of the horizontal bar is
the supporting pillar for a black pain-
ted sheet iron screen 340x250 with a
Dia10 hole at the centre. Overall H850.
Ref: Hauch, vol 2 p 83.

1648 (HAUCHCOL 473, AWH F35).
Prism.
Not signed.
c1800 (g).
Right, equilateral three-sided crystal
glass 36x175 in brass fitting. Mounted
horizontally in brass stirrup on expand-
able pillar. Wooden base Dia180 and
baluster-turned stand H150. Overall
H350.
Ref: Hauch, vol 2 p 85.

1649 (SORØAKAD 474). Prism.
Flintglass.
Not signed.
Mid 19th century (g).
Three-sided, right angled, 40x40x56
L40. Expandable brass pillar. Cast iron
tripod. Overall H300-390.

1650 (SORØAKAD 475). Prism.
Flintglass.
Not signed.
Mid 19th century (g).
Equilateral, 20x120. Brass fitting, stir-
rup, brass pillar Dia7, brass base
Dia100. Overall H275.

1651 (HAUCHCOL 473, AWH F36).
Prism.
Not signed.
c1800 (g).
As item 1648, except glass 33x90.

1652 (HAUCHCOL 525, AWH F39).
Coloured glass. Two.
Not signed.
c1800 (g).
Green and blue, Dia64 in Turtle frame
extended in handle. L140.

1653 (HAUCHCOL 481 and 486, AWH
F27). Lenses. Six.
Not signed.
c1800 (g).
(a) Plano convex, Dia70, focus about
600, no frame
(b) Plano convex Dia49, focus about
120, no frame.
(c) Plano convex Dia54, focus about
240, no frame.
(d) Two plano convex Dia98, focus
about 240, no frame.
(e) Biconvex Dia65, turtle frame

1654 (HAUCHCOL 483, AWH F28).
Lens. Biconvex.
Not signed.
c1800 (g).
Dia240. Focus 1030. Brass frame. Brass
stirrup on pillar Dia23-20 H140. Fol-
ding tripod with straight feet.
Ref: Hauch, vol 2 p 81.

1655 (HAUCHCOL 492, AWH F50).
Camera obscura.
Not signed.
c1800 (g).
'Camera clara'. Boxwood case
200x135x107 inside which an inner
case with objective lens can be adjusted
with a key by rack and pinion. 45° mir-
ror. The outer case has an ocular lens
over which a frosted glass plate, now
missing, has been placed for drawing.
Ref: Hauch, vol 2 p 106, pl 32 fig 7.

1656 (HAUCHCOL 494, AWH F51).
Camera lucida. Wollaston's.
Signed: FRIEDRICH VOIGTLAEN-
DER / IN WIEN
c1810 (g).
Brass base 45x50x13. Expandable arm
Dia7 L180-300. Extension graduated in
 $1/2$ inch units. Prism with shield. Black
pasteboard box, trapeze shaped 70-
55x215x25, lined with green velvet

1657 (HAUCHCOL 540, AWH F64).
Telescope.
Not signed.
c1800 (g).
"To show the construction of dioptric
telescopes" (Hauch cit). Pasteboard
and wood with brass collars. Black pain-
ted wooden outer tube Dia70 L975 with
objective lens. Three wooden draws
covered with coloured paper L870,
L630, L400. The inner tube contains an
extra wooden tube consisting of five
small wooden tubes threaded together
and containing erecting lens, cross-
wires and diaphragm.

1658 (HAUCHCOL 544, AWH F62).
Telescope. Refracting.
Signed: J. Smith Kiöbenhavn / No 274
c1800 (g).
Four draw. Mahogany outer tube Dia60
L280 with brass fitting. Objective lens
Dia55. Eyepiece (smallest tube) L240,
push focusing. Dust slide.

1659 (HAUCHCOL 545, AWH F62).
Telescope. Refracting.
Signed: Ayscough / LONDON / Invt
et Fecit / No 704
c1760 (fl).
With two achromatic objectives moun-
ted in a cubic brass housing, so that one
can substitute the other by tilting the

mounting; positions marked "Long – Short". Mahogany tube Dia42 L400 in two parts joined by wooden screw. Brass collars. Brass eyepiece. Upright image. Fitted oak box 470x125x70.

Marked on the box: For Nich Fenwick Esq & Co / Elsenore (merchant in Elsenore).

Ref: Gli Strumenti p 416.

1660 (HAUCHCOL 547) Telescope.

Refracting. Binocular.

Signed around the left eyepiece: DOLLOND LONDON

c1800 (g).

Brass tubes Dia58 L750. Mounted on mahogany frame. Brass pillar Dia32 H220. Folding tripod. Objectives Dia50. Three sets of eyepieces, two with sun shades. They screw into a brass bracket, adjustable by rack and pinion for focusing; individual adjustment of the right eyepiece. Dust caps for objectives. Fitted mahogany box 820x210x110.

Ref: Gli Strumenti p 418.

1661 (SORØAKAD 548). Telescope.

Refracting.

Signed: J.M.Kleman & Zoon / Koninkl Instr-makers / Amsterdam c1820 (firm fl 1810-40).

Achromatic. Brass tube Dia70 L1020. Mounted on semicircle with rack and pinion adjustment of altitude. Below is a horizontal circle with rack and pinion adjustment. Mahogany tripod H1450 with brass fittings. Objective Dia65. Eyepiece Dia35; rack and pinion focusing. Fitted mahogany box 1260x250x150 with brass plaque engraved "De Minister voor het / Departement van de Marine / van het /

KONINGRYK der NEDERLANDEN / aan / den Schoutbynacht Sneedorff / Directeur en Chef van het / Koninglyk Deensch Kadetten". (Hans Chr. Sneedorff was head of the naval cadets 1797-1824).

1662 (HAUCHCOL 557, AWH F70).

Telescope. Newton's.

Made by Professor Johan Gottlieb

Schrader in Kiel (according to Hauch's inventory) based on Herschel's telescopes.

c1795 (Schrader in Kiel 1790-98).

Octagonal mahogany tube 175 mm across L1290. Brass fittings for ocular and angle mirror focusing. Mirrors are original. Viewfinder and mahogany cover reconstructions. Elevation adjusted by rack and pinion, side adjustments by a long screw. Mahogany pillar and tripod. Overall H1600. Wooden box 240x240x100 for mirror and ocular.

1663 (HAUCHCOL 558, AWH F71).

Telescope. Gregorian.

Signed on the heliometer: J.Dollond / Invenit et Fecit

c1760 (Hauch states that the maker is "Dollond the father").

Brass tube Dia70 L330. Semicircle with worm gear adjustment of altitude. Azimuth adjustment. Eyepiece Dia26 L88. Secondary mirror adjustable from front. Micrometer (Heliometer), two half lenses, Dia57. Fitted mahogany box 490x230x125, mahogany box for heliometer. Ref: Hauch, vol 2 p 124.

1664 (STENOMUS 229-3). Quadrant.

Signed: Fra Professor Smiths Etablissement / Kiöbenhavn

c1830 (g).

Brass. Rad260. Silvered scale -10 to 100° in 10 min divisions; vernier to 15 sec. Can be positioned for vertical and horizontal use. Pillar H40-50. Tripod with level screws. The alidade is reconstructed. Telescope missing.

1665 (STENOMUS 239-2). Watch.
Seconds.

Signed: Urban Jürgensen
c1820 (g).

Spring clockwork with key. Silvered dial, Dia75, scale 0-60. H50. Fishskin covered box lined with green velvet 95x95x70.

1666 (STENOMUS 303-22). Alidade.
"Den danske Lineal".

Made by Geodætisk Institut, Copenhagen (inf)
19th century (g).

L520, W50 with chamfered edges. Telescope Dia30 L335. Rack and pinion focusing. Elevation scale -27 to +27° in 1° divisions and -10 to +10° in 1/3 deg divisions; vernier to 2 min.

1667 (HAUCHCOL 604, AWH E28).
Thermometer.

Not signed.
c1800 (g).

Spirit fill. Softwood base 700x95 with glued on paper scale (worn); marked: "Thermometre / overens stemmende / med de Herrer / Opfinderes Inddeling / nemlig / CHRISTIN FAHRENHEIT / REAUMUR LISLE". On the scale is stated points for boiling water, boiling spirit, melting sugar, russian bath, fever heat, freezing point. Also stated: "Paris 1740 / Kiöbenhavn 1709" being minimum winter temperatures.

1668 (HAUCHCOL 605).

Thermometer. James Six'.

Signed: Thermometre / fait par Cetti / a Copenhagen

c1800 (g).

Wooden base 590x85 with metal (pewter?) scales -38 to +50° and -40 to +53°.

Ref: Hauch, vol 2 p 53, pl 17 fig 2.

1669 (HAUCHCOL 603, AWH E23).
Thermometer.

Signed: Thermometer nach Reaumur und Fahrenheit A.Cetti.

c1800 (g).

Mercury in glass. The capillary is bent at the top and continues downwards along the capillary in a wider glass tube containing the paper scale. Capillary tube Dia5, scale tube Dia11 L330. Scales -8 to 212°F and -15 to 80°R.

Ref: Hauch, vol 2 p 51 pl 16 fig 10

1670 (SORØAKAD 605). Thermometer. James Six'.

Not signed.

c1900 (g).

Painted wooden base 300x75. Scales -30-0-40° Reaumur and -30-0-40° Reaumur for the two branches with mercury. Indices for maximum and minimum temperatures.

1671 (HAUCHCOL 559, AWH F72).

Telescope. Gregorian.

Not signed.

c1800 (g).

Brass. Tube Dia95 L400. Eyepiece Dia26 L60. Dust covers. Secondary mirror adjusted from front. Mounted on bracket with two knurled thumbscrews. Universal joint. Pillar. Three folding cabriole feet. Overall H350.

1672 (HAUCHCOL 562, AWH M6).

Quadrant. Gunner's (?).

Signed: Baradelle Fils AParis

c1790 (g).

Hauch's inventory states 'for hand-holding'. Brass. Radius 11 inches. A brass plate has a straight edge L~340 parallel to one of the radii. Scale 0-90° in 10 min divisions. Sight with support for plumb bob bent. Second sight missing. On the back are eight small indents, Dia~3, probably for sights?

1673 (HAUCHCOL 563, AWH M5).

Quadrant. Brass.

Signed on the level:

Baradelle Fils AParis

Signed on the limb:

Baradelle fils AParis 1774

1774.

Radius 12 1/2 inches. Lattice frame. For vertical or horizontal mounting. Fixed and pivoted telescopic sights. Two scales, 96 and 90° in 10 min divisions, vernier to 20 sec. Clamp and tangential screw. Spirit level. Azimuth scale 0-360° in 1° divisions; vernier to 1 min. Brass pillar Dia36-29 H300.

1674 (HAUCHCOL 564, AWH M7).

Quadrant. Gunner's.

Signed: G.Adams Mathematical /

Instrument Maker to His / Majesty /

Fleet Street London

c1770 (g).

Axe-shape. Brass. Rad186. Scale 0-90° in 15 min divisions. Engraved radii at 0, 45 and 90°. Brass bar extending radius L590, cross section 24x15 to insert in gun barrel. Shaped oak box L625 and quadrant Rad230; spring lock on the lid.

1675 (HAUCHCOL 565, AWH M8).

Octant.

Signed on index arm: Dollond London

c1790 (g).

Ebony frame with one vertical strut and bowed horizontal strut. Ivory scale Dia445, -5 to 95° in 20 min divisions; vernier to 1 min. Brass index arm with clamping screw. Pinhole sight for forward and reverse sighting. Two red shades in square brass frames for alidade mirror. Shaped oak box 510x480.

1676 (SORØAKAD 567). Planetarium.

Not signed.

c1800 (g).

Wooden frame 385x130 H120 with wooden reduction gears for the planets' rotation. Seven small ivory spheres rotate around brass sphere. The spheres for Saturn and Uranus are supported by folding arms. Mercury, Venus, Earth, Mars and Jupiter are shown with moons. Wooden crank moves the rotating system. Circular cardboard Dia350 shows Zodiac; marks for every fifth day in every month, 30 days in every zodiacal sign.

1677 (HAUCHCOL 570, AWH M1).

Globes. Set of two, terrestrial and celestial.

Signed on cartouche: GLOBUS COELESTIS / Ex Catalogo Britannico / et De / a Cailli observatio / nibus ad Annum P.C.N. 1800 / Cura / Soc Cosmogr. Upsa / I delineatus ab / Andrea Åkerman / 1766.

24 inches diameter. Brass meridians and horizon. Four wooden feet. 0-meridian at Cap Verde. Hour ring missing on the terrestrial globe.

1678 (HAUCHCOL 571, AWH M2).
Armillary sphere. Ptolemaic.
Signed on base: Neale Patentee /
Company / AT THE MILE END FACT-
ORY.

Signed on globe: A NEW / GLOBE / OF
THE EARTH / Laid down according to
the latest / Observations / BY / Richard
/ Cushee / 1730 / Sold by R. Cushee of
the Globe and Sun near St Dunstan's
Church in Fleet Street LONDON
c1750 (g).

12 inch terrestrial globe. Brass armilla-
ries, horizon, meridian, equator, altitu-
de, azimuth. Sun and moon move-
ments by gear train operated by crank.
0-meridian through London. Brass
base Dia210. Overall Hc650.

1679 (HAUCHCOL 571, AWH M2).
Armillary sphere. Ptolemaic.
Signed on base: Neale Patentee / &
Company / AT THE MILE END FACT-
ORY

Signed on the globe: A New Celestial /
GLOBE / By R. Cushee / 1730.
c1750 (g).

12 inch celestial globe. Brass armillari-
es, horizon, meridian, hour ring, sun
and moon. Movements by gear train.
Brass base Dia210. Baluster turned
brass pillar. Horizon ring with two
calenders and 32-point compass scale.
Hour scale and index. Overall H~700.

1680 (HAUCHCOL 572, AWH M3).
Globe. Terrestrial.
Signed: Prenobilissimo, Spectatissimo,
atque Honoratissimo Viro Domino
JOBSTIO de overbeke Patrono omni
honoris cultu suscipiendo Globos hos-
ce d.d.d. Joh: Beyser Anno 1722.
1722

12 inch diameter, Dia300. Plaster on
pasteboard. 12 paper gores, polar caps
Dia53. 0-meridian passes Canary
Islands. Octagonal oak horizon ring
Dia422 supported by four wooden arcs
to a turned wooden base. Restored
1986.

Ref: Rasmussen. See also: *Der Globus-
freund* no 38-39 1990: Symposium
Report. Gli Strumenti p 92.

1681 (HAUCHCOL 574, AWH M4).
Globes. Two celestial half-globes.
Signed: Johann Beyer / Inventor et
delin / Hamburg 1718
1718.

Northern and southern hemispheres
with the constellations depicted on the
concave side. 12 inch diameter. Wood-
en equatoreal ring Dia420 with paper
scale: months, days etc. At the centre is
a model of the Earth in a semicircular
mount adjustable for polar distance 0-
90°. The hemispheres are mounted so
that they can be tilted into an upright
position and placed opening to open-
ing so as to depict the total celestial
sphere with the Earth globe at the cen-
tre.

Ref: Gli Strumenti p 92.

1682 (HAUCHCOL 580, AWH E3).
Heat dilatation stand.
Not signed.
c1800 (g).

s'Gravesande's ring and ball experi-
ment. Mahogany base Dia125, pillar
H330, brass plate with circular hole
Dia13. Brass chain for metal sphere
(missing). Bracket for heating lamp
(lamp missing).

1683 (HAUCHCOL 583, AWH E30).

Pyrometer; dilatation instrument.

Not signed (probably made by Pixii).

Early 19th century (g).

Mahogany base 315x165x60 with drawer for accessories. On this is a marble slate 285x140 with two brass pillars. The expansion rod is placed in these pillars, fastened by a set screw to one and sliding in the other. The moving end pushes on a lever which via a toothed sector and gear turns a pointer, indexing on an enamelled scale 0-60. A heat expansion of about 1.5 mm moves the index 0 to 60.

Ref: Hauch, vol 2 p 56, pl 17 fig 7.

1684 (HAUCHCOL 614).

Thermometer, Leslie's differential.

Signed: E. Ducrétet & Cie a Paris

Mid 19th century (g).

Wooden base Dial60. Turned baluster shaped pillar, U-frame 200x230 with painted scales -25 to 45°. Fluid gone.

Ref: Hauch, vol 2 p 54, pl 18 fig 2.

1685 (HAUCHCOL 617, AWH E32).

Pyrometer, Wedgwood's.

Not signed.

c1800 (g).

Mahogany box 200x120x70 with sliding lid, containing clay crucibles and cylindrical pellets which shrink when exposed to high temperature in an oven. Pull out brass scale 174x68 in drawer at the side has scale in the form of two tapering grooves. Scales 0-120 and 120-140. Pellets are marked 1,2,3 or not marked.

Ref: G.Turner I, p 116. Hauch, vol 2 p 57, pl 17 fig 10, 11, 12. Gli Strumenti p 352.

1686 (HAUCHCOL 514, AWH F56).

Microscope. Lucernal.

Not signed.

c1890 (g).

Very defective, only brass stand and pyramidal mahogany case L400 extant. Overall H500. Described by Hauch as "Adams lamp microscope for opaque and transparent objects with two Argand lamps and Laterna magica."

Ref: A.Turner, p 120. Hauch, vol 2 p 116, pl 37.

1687 (SORØAKAD 500). Goniometer.

Wollaston's.

Signed: Lerebours & Secretan à Paris

Mid 19th century (g).

Brass base Dial30. Three levelling feet.

Vertical disc Dial10, graduated at the periphery, but scale illegible. Vernier, clamp and tangential screw.

1688 (HAUCHCOL 497). Heliostat.

Manual.

Not signed.

c1800 (g).

Wooden plate 230x230 to fit in window shutter. Upon this is a brass plate 185x185 with a semicircular slit. Two brass rods allow adjustment of outside mirror 190x75. The reflected sun light falls through a central brass tube.

Ref: Hauch, vol 2 p 66, pl 21 fig 1 etc.

1689 (HAUCHCOL 534). Tourmaline forceps.

Not signed.

c1800 (g).

L165. Made of bent steel wire.

Ref: Hauch, vol 2 p 98, pl 31 fig 3.

1690 (SORØAKAD 536). Polariscope.

Nörrenberg's.

Signed: J.Duboscq / a Paris

c1870 (g).

Mahogany base 305x245x70 with drawer. Two brass uprights H450 supporting mirror 150x85. Aperture for revolving glass in circular stage scale 0-180-0° in 1° divisions; vernier to 5 min. Glass in brass frame. Second stage with aperture Dia45, scale 0-180-0°. Top stage with prism, scale 0-180-0° in 0.5° divisions, vernier to 1 min. Overall H600.

1691 (HAUCHCOL 537). Polarization instrument, Fresnel's.

Not signed.

c1810 (g).

Iron base Dia190. Brass pillar Dia24 H430. On a bracket at the top is the centre for a vertical brass ring with scale 180-0-180°, 0 at the top. At the centre is mounted a horizontal, blackened glass plate as mirror (missing). Pivoting at the centre are two brass arms with radial brass tubes Dia40 L200. At the outer ends are brass fittings with rotatable glass and mirror can be fitted; scales 0-360°. Light through one of the tubes to be reflected through the other tube.

Ref: Hauch, vol 2 p 93, pl 30 describes ten experiments on the polarization of light to be made with this instrument.

1692 (HAUCHCOL 573). Globe. Celestial.

Signed: To the Rev / NEVIL MASKELYNE D D F R S / This New British Celestial Globe / Containing the Positions of nearly 6000 Stars, Clusters, Nebulae, Planetary / Nebulae etc correctly computed and laid down for the year 1800 from the latest observations and discoveries by Dr Maskelyne, Dr Herschel, The Revd Mr Wollaston etc etc / Respectfully Dedicated / By his most obedient hble Servants W.&

T.M.Bardin.

c1800 (g).

24 inch diameter. Brass meridian. Wooden horizon ring with zodiacal signs and calender. Wooden pillar and tripod with compass.

1693 (HAUCHCOL 573). Globe.

Terrestrial.

Signed: To the Rt Honourable / SIR JOSEPH BANKS BAR K B / President of the Royal Society / This New British Terrestrial Globe / Containing all the latest Discoveries and Communications from the most / correct and authentic Observations and Surveys to the year 1798 by Capt Cook and more recent Navigators. Engraved from an accurate Drawing by Mr Arrowsmith, Geographer / Respectfully Dedicated by his most obedient hble Servants / W.& T.M.Bardin

c1800 (g).

24 inch diameter. Brass meridian. Wooden horizon ring as item 1692. Wooden pillar and tripod, no compass.

1694 (SORØAKAD 616).

Thermometer.

Not signed.

Mid 19th century. (Sorø Akademi was responsible for making daily environmental observations).

For measuring ground temperature. Oak Dia31 L880 with iron point covering the thermometer bulb of the encased mercury in glass thermometer. Brass scale -20 to +30°C. Sliding cylindrical brass cover to protect the scale.

1695 (HAUCHCOL 625). Calorimeter. Lavoisier's.

Not signed.

c1800 (g).

Black laquered sheet iron. Iron tripod H550 with leather covered ring Dia350 in which the calorimeter bowl is inserted. The bowl Dia450 H350 has a conical bottom H250. At the centre is a cage of iron net Dia190 surrounded by two cylindrical chambers Dia350 and Dia450 with spouts for letting out molten water.

Ref: Hauch, vol 2 p 61, pl 19.

1696 (HAUCHCOL 640, AWH E9, E10). Water hammer.

Not signed.

c1800 (g).

Glass. L240, tube Dia18, spherical bulb and pear shaped bulb.

1697 (HAUCHCOL 643, AWH E16).

Blowtorch. Marquard's.

Not signed (probably French).

c1800 (g).

Bronze foot in the shape of an eagle's claw supporting a bronze oil lamp from which an extension in the shape of an eagle's neck and head is holding a brass sphere over the lamp's flame. A brass tube protruding from the top of the sphere is bent to end in a nozzle at the flame.

1698 (HAUCHCOL 642, AWH E12).

Aeolipila.

Not signed.

c1800 (g).

Bronze. Pear shaped Dia100 L120 with wooden handle (broken). Steam outlet through screw-on pipe Dia8 L100 ending in a nozzle. Brazier missing.

Ref: Hauch, vol 2 p 48, pl 15 fig 5.

1699 (HAUCHCOL 644, AWH E13).

Aeolipila.

Not signed.

c1800 (g).

Jet cart. Brass sphere Dia60 mounted on a brass carriage with three wheels Dia78 and Dia50. Two spirit lamps for heating the sphere. A spout to screw on the sphere accepts a cork stopper, which, when blown out by steam, pushes the carriage in the opposite direction.

Ref: Hauch, vol 1 p 22, pl 3 fig 9.

1700 (HAUCHCOL 650, AWH I5).

Steam engine. Savery's steam water pump.

Not signed.

c1800 (g).

(Thomas Savery, inv 1697). Glass cylinder Dia90 L160. Brass boiler Dia150 H230. Spirit heating. Two-way steam valve. Suction pipe to lead basin below. Pressure pipe to lead basin above. All mounted in mahogany stand and frames. Overall dimensions 450x350x900. Ref: A. Turner, p 202 fig 221. Hauch, vol 2 p 46, pl 14 fig 10.

1701 (HAUCHCOL 651, AWH I4).

Steam engine. Watt's type with condenser.

Not signed.

c1800 (g).

Brass cylinder Dia95 L170. Slide valve. Beam L420. Flywheel Dia470. All mounted in mahogany stand with four turned mahogany pillars. Overall dimensions: 675x300x650. Boiler is mentioned in Hauch's inventory, but missing.

1702 (HAUCHCOL 649, AWH E17).

Papin's digester.

Not signed.

c1800 (g).

Copper. Dia170. Lid Dia130. Safety valve with weights. Release cock. Suppor-

ted by iron ring on tripod H300. Overall H590.

Ref: Hauch, vol 2 p 47, pl 16 figs 1-4.

1703 (HAUCHCOL 662, AWH G126).

Hygrometer.

Not signed.

c1800 (g).

Brass. Semicircular scale 0-100 (S-H).

Brass neck L360 extending from the middle of the scale with fitting for filament (missing). Zero adjustment screw. Oak case, shaped 470x165x30 with sliding lid. Hauch refers to this instrument as Casbois' type, made by Renard in Copenhagen. The measuring element was probably silk worm gut.

Ref: Nicolas Casbois, *Sur un hygromètre a boyau de ver a soie*, 1784.

1704 (HAUCHCOL 664). Hygrometer. Saussure's.

Signed: Richer / Rue Louis de Marais / No 585 / an 9 / No 14
1802.

Brass. For two hairs (missing). Thermometer -15 to 80°; at 0 is engraved "GL", at 80 is engraved "EB". The filament is protected by a brass case 280x30x20 with a grid. Index with spiral spring; scale Rad50, 0 to 100 (Sec - Humide). Base by four folding brass feet L50. Shaped oak box 390x125x40.

1705 (HAUCHCOL 665, AWH G128).

Hygrometer.

Signed: Mechanicus / Smith fecit /
Kjøbenhavn / No 7

c1800 (g).

Hygroscopic element is wood, cut in app two mm thick plate 60x300, mounted vertically in brass guides with fibres

horizontal, pushing at the top on a brass plate, which again pushes a horizontal brass lever L300, indexing on an arbitrary scale 0 - 100. Mahogany base 310x120 with four claw feet. Two glass pillars H260 support mahogany plate with brass scale and fitting with pivot for index. Overall H450.

Ref: Frick, p 544.

1706 (SORØAKAD 668). Hygrometer.

August's psychrometer, wet and dry bulb type.

Signed: Julius Nissen / Kjøbenhavn
1852

1852.

(Ernst Ferdinand August 1795-1870). Mahogany base 155x90. Mahogany upright H420 with brass brackets supporting two mercury in glass thermometers Dia17 L300, scales -25 to +50°C. One thermometer also has scale 1 to 22 Paris lines, with 1 at -22.5° and 22 at +25° (non-linear). Beneath this thermometer is a small glass vial for water, and a muslin hose to cover the thermometer bulb. The other thermometer has scale 0 to 15 Paris lines with 0 at -25° and 15 at 37.5°.

1707 (HAUCHCOL 645, AWH G97).

Fountain. Heron's; water heating.

Not signed.

c1800 (g).

Half egg shaped sheet iron container Dia195 H160 with basin Dia155 above. In the middle is a vertical tube ending at the top in a nozzle. Spout with cork stopper for filling. Placed in a wooden ring supported by three turned legs H170, so that a heating lamp (missing) can be placed underneath. All painted black.

1708 (HAUCHCOL 683, AWH K13).
Friction electricity kit.

Not signed.

c1800 (g).

Wooden box 145x115x100 containing coloured bands of various material on reels, cat's skin stuck to cardboard and bent as a book for rubbing the bands. Small Leyden jar L140 for hand holding.

1709 (SORØAKAD 681). Electrostatic demonstration.

Not signed.

Mid 19th century (g).

Cardboard tray Dia135 H25 to cover with glass, which by rubbing makes pith balls or bits of paper etc dance. Cardboard base 220x220.

1710 (HAUCHCOL 687, AWH K41).

Conductors. Two.

Not signed.

c1800 (g).

Brass. Dia35 L340 on glass pillar Dia15 H240. Turned wooden base. Overall H340. One end L70 of the conductors is detachable. Hauch call these instruments Canton's electrometers.

1711 (HAUCHCOL 688). Conductor.

Not signed.

c1800 (g).

Brass. Rod Dia2 L390 with two brass spheres Dia20. Glass pillar Dia14 H200. Turned mahogany base Dia100.

1712 (HAUCHCOL 690).

Electroscope.

Not signed.

c1800 (g).

Volta's straw electroscope. Pear shaped flask Dia60 H95. Sealed with lacquer.

1713 (HAUCHCOL 693).

Electroscope. Bennet's gold leaf.

Not signed.

c1800 (g).

Brass house Dia38 H100. Lower half unscrews to reveal inner glass Dia27. Tweezers for gold leaves unscrews with the conductor, which is a small brass cylinder.

1714 (SORØAKAD 799). Electroscope.

Condenser electroscope.

Not signed.

Mid 19th century (g).

Brass base Dia90. Glass sphere Dia90, open at top and bottom and sealed into brass base Dia90 and brass condenser plate Dia80. Aluminium leaves (?). Overall H130.

1715 (HAUCHCOL 691).

Electroscope.

Not signed.

c1800 (g).

Brass base Dia150. Glass sphere Dia195 with neck in which a brass stopper is insulated with wax. Brass rod and metal leaves. Overall H400.

1716 (HAUCHCOL 694, AWH K19).

Electrometer. Henley's.

Not signed.

c1800 (g).

Wooden base Dia90. Ebony socket for ivory stem Dia7 H110 with ivory quadrant, engraved 0-90. Ivory pendulum for pith ball and arrow for indexing. Overall H260.

1717 (HAUCHCOL 717, AWH K32).

Conductor.

Not signed.

c1800 (g).

Brass. Base Dia70. Pillar Dia11 H80

with brass sphere Dia25 at the top. Through this slides a brass rod Dia6 with a sphere at each end.

1718 (HAUCHCOL 695, AWH K24).
Electrometer. Coulombs torsion balance.

Signed: FORTIN. Place Sorbone à Paris

c1800 (g).

Wooden base Dia196. Cylindrical glass vessel Dia170 H180 with horizontal scale 0-360°. Circular lid with opening for inserting charge. Suspended from a hook at the centre is an ivory rod with a brass sphere Dia10 at one end and a counterpoise shaped for indexing on the scale at the other. The suspension can be turned at the top (ivory knob) to counteract torsion of the suspending cord.

1719 (HAUCHCOL 719). Conductor.

Not signed.

c1800 (g).

Turned mahogany base Dia135. Turned expandable pillar Dia30 H300. Brass joint for conductor rod Dia5 L200 with sphere Dia90 at one end and bent to a hook at the other.

1720 (HAUCHCOL 725). Discharging tong.

Not signed.

c1800 (g).

Glass handle L100. Brass pivot for two curved conductors ending in brass spheres Dia17.

1721 (HAUCHCOL 724, AWH K71).

Electrostatic discharger.

Not signed.

c1800 (g).

Wooden base. Glass pillar Dia22 H180 with brass cap and bracket for vertically sliding brass rod having at the top a joint to a pointed rod L300.

1722 (HAUCHCOL 696, AWH K106).

Electrometer. Hauch's discharger.

Not signed.

c1792.

Oak base 320x105x30. Two glass pillars Dia22 L200 and L260. Balance beams on each with brass fittings and knife edge fulcrums. The beam at the smaller pillar has a glass pan at one side and a brass arm with sliding weight at the other. The beam on the larger pillar has at one side a glass arm with sliding ivory weight (a suspended pan is missing), and at the other side a brass arm ending in brass sphere. The electrostatic repulsing force act between this sphere and a fixed sphere. Interaction between the two balance beams multiplies the movements of the contact points, and gives, according to Hauch, more independence of atmospheric conditions.

Ref: Hauch, 'Forsøg til et forbedret Udlade-Electrometer', in *Videnskaberne Selskabs Skrifter vol IV*, Copenhagen 1792. *Encyclopaedia Londinensis vol 6*, London 1810. *Edinburgh Encyclopaedia vol 8*, 1830.

1723 (HAUCHCOL 697, AWH K108).

Electrometer. Cuthbertson's discharge electrometer.

Signed: Inv. Cuthbertson / Poland Street / No 54 / 1805

1805.

Mahogany base 460x145x30. Three glass pillars Dia20. Centre pillar carries brass balance beam L400 ending in two

brass spheres Dia31. One side of the beam has a sliding brass weight; engraved scale 0-60. The two other pillars have stationary brass spheres repelling and attracting charges resp.

1724 (HAUCHCOL 697, AWH K109).
Electrometer. Cuthbertson's discharge electrometer.

Signed: Inv. Cuthbertson / Poland
Street / No 54 1805.
1805.

Oval mahogany base 320x140. Two glass pillars; the larger Dia20 H300 has at the top a brass sphere covering the fulcrum of a brass balance beam with brass sphere at each end. Above one of these is a fixed sphere (repelling force). The other glass pillar Dia18 H150 has a fixed brass sphere (attracting force).

1725 (HAUCHCOL 700, AWH K9).
Nairnes medico-electric generator.
Signed: NAIRNE'S / PATENT / MEDICO ELECTRICAL / MACHINE
c1790 (g).

Mahogany base 570x240. Two glass pillars Dia32 H300. Wooden bearings for axle for glass cylinder Dia160 L320 (reproduction). Prime conductors are black lacquered sheet iron Dia100 L440. Cushion and comb attached directly to the conductors. Conductors and accessories incomplete. Wooden accessory box.

1726 (HAUCHCOL 701, AWH K3).
Electrostatic generator. Friction.
Signed on oval brass plaque: DUMONTIÉZ FRERES / A PARIS 1796
1796.

Mahogany base 1550x960 on four glass legs H240. Two prime brass conductors Dia100 L1200 are supported on four glass pillars Dia42 H600. (sometimes called Ramsden type). Two mahogany uprights in the shape of ionic columns, carry the glass plate Dia975 and cushions. Crank with glass rods and ivory handle.

1727 (HAUCHCOL 702, AWH K5).
Electrostatic generator. Van Marum type.

Not signed.

Early 18th century (g).

Mahogany base diamond shape ca 1100x1100. Three glass pillars Dia40 H900 support cushions and one prime conductor. Mahogany column Dia150 support axle bearing for the glass plate Dia885. The crank is supported on a separate mahogany stand, and joined with the axle by glass rods with brass joints. Overall L2550 W1500 H1750
Ref: Hackmann, p 296.

1728 (BANGMUSE 16820). Hydrogen lamp. Döbereiner.

Not signed.

Mid 19th century (g).

Octagonal gold painted sheet iron base Dia160. Upon this is a sheet iron cylinder Dia110 H170 with romantic painting. Brass lid Dia116 with brass stop cock with nozzle for hydrogen outlet, a brass ring Dia12 for holding platinum catalyst and spring for holding match stick. Under the lid is suspended a glass flask Dia50 H150, open at the bottom. The lid has threads Dia75, presumably for holding a glass jar (missing). Overall H240.

1729 (AALBUNIV LBH 18). Level.

Telescopic.

Not signed.

1859 (inf).

Brass. Telescope Dia15 L95. Push fit focusing. Side mounted spirit level Dia15 L61. Threaded socket for staff mounting, four horizontal adjusting screws. Platform to hold tube is hinged at one end and has level-adjusting screw at the other. Allegedly made by Jünger, Copenhagen 1859

1730 (AALBUNIV LBH 95). Level.

Telescopic.

Signed: TH. LÆSSØE MÜLLER /
KØBENHAVN / No 48

1914 (inf).

Brass. Telescope Dia32 L300. Eyepiece with rack and pinion focusing. Spirit level above tube. Tube base with levelling screw and circular spirit level. Staff mounting. Three adjusting level screws. Overall H160. Wooden case, fitted.

1731 (AALBUNIV) Theodolite.

Not signed.

c1900 (g).

Brass, oxidized brass. Telescope Dia31 L360. Eyepiece with push fit focusing. Spirit level above tube. Dry compass Dia75 above the tube, scale 0-90-0-90°, clamp for the needle. Vertical silvered scale, 35-0-35° with 0.5° divisions. Vernier to 1 min. Azimuth scale 0-360° with 1° divisions, vernier to 3 min. Female threads for staff mounting, four horizontal adj screws. Overall H240.

1732 (AALBUNIV LBH 19).

Level. Y-type.

Not signed.

1859.

Brass. Telescope Dia30 L350. Eyepiece with rack and pinion focusing. Level adjustment with micrometer. Objective Dia30. Horizontal scale 0-360° in 0.5° divisions. Vernier to 1 min. Tangent screw and clamp. Cone for staff mounting; two circular base plates with two levelling screws against spring loads. Made by Jünger, no 3, October 1859 (inf).

1733 (AALBUNIV LBH 78). Level.

Telescopic.

Not signed.

1899 (purchased for DCr 136).

Brass. Telescope Dia28 L300. Objective Dia34. Eyepiece with rack and pinion focusing. Spirit level L155 above tube. Tube base with levelling screw. Female threads for staff mounting with four horizontal adjusting screws. Made by Lundby, Copenhagen (inf).

1734 (AALBUNIV) Level. Telescopic.

Not signed.

c1900 (g).

Brass. Telescope Dia34 L500. Mounted in Y-shaped bearings, but not easily reversible. Eyepiece with rack and pinion focusing. Objective Dia34. Spirit level Dia27 L215 above the tube. Tube base with levelling screw. Horizon scale 0-360° in 0.5° divisions; vernier to 1 min. Cone with clamping screw for staff mounting. Overall H136.

1735 (AALBUNIV LBH 49). Level.

Y-type, yokes with spring locks.

Signed: Ertel & Sohn München

c1860 (g).

Brass. Telescope Dia26 L250. Eyepiece with rack and pinion focusing. Objective Dia23. Spirit level below the tube. Tribrach with level screws. Rotatable in

azimuth, but no scale; clamp and fine adjustment screw. Overall H150

1736 (AALBUNIV LBH 15). Level.

Brass.

Not signed.

Made by: 'Mekanikus Poulsen' (H. Poulsen, Copenhagen) (inf).

c1850 (g).

Telescope Dia32 L420. Eyepiece with rack and pinion focusing; extension 105mm. Objective Dia35. Side mounted spirit level. Rotatable in azimuth. Silvered scale 0-360° in 0.5°. No index, no vernier, no compass. Cone with clamp screw for staff mounting. Overall H160.

1737 (AALBUNIV LBH 98). Level.

Y-type.

Signed: TH. LÆSSØE MÜLLER

KØBENHAVN No 50

1914 (purchased for DCr 150).

Brass. Telescope Dia31 L300. Eyepiece extension L35, rack and pinion focusing. Spirit level below the tube. Y-bracket tilts around the middle with adjustable stop at one end and thumb screw at the other. Circular bubble level. Rotatable in azimuth, but no scale. Clamping screw and fine adjustment. Tribach.

1738 (AALBUNIV LBH 48). Alidade for plane table. Telescopic.

Not signed.

Mid to late 19th century (g), (purchased second hand 1894).

Brass. 425x47x5. Chamfered edges. Without scale. Telescope Dia25 L225, mounted on pillar Dia24-18 H130. Objective Dia25. Push fit dust cover. Eyepiece Dia18 with rack and pinion focusing, extension 40. Pinhole and wire sights on back of telescope.

1739 (AALBUNIV LBH 11). Alidade for plane table. Telescopic.

Not signed.

c1850 (g).

Brass. 575x45x5. Two chamfered edges. Without scale. Telescope Dia30 L380. Ybearings with locking bracket. Eyepiece with rack and pinion focus. Spirit level above the tube.

Made by 'Mekanikus Poulsen' (H. Poulsen, Copenhagen) (inf).

1740 (AALBUNIV LBH 39). Alidade for plane table. Telescopic.

Not signed.

c1860 (g).

Brass. 528x52. One chamfered edge without scale. Pillar for telescope mounted eccentrically on side-extension of the rule. Y-type telescope bearings with clamps. Telescope Dia23 L280. Eyepiece Dia17, rack and pinion focusing with extension 30. Objective Dia26, dust cover missing. Spirit level above the tube. Overall H160. Made by Jünger, Copenhagen. (inf).

1741 (AALBUNIV LBH 3). Alidade for plane table. Telescopic.

Not signed.

c1900 (g).

Brass and oxidized brass. 535x50x5. One chamfered edge. Without scale. Eccentric mounted telescope Dia23 L265. Eyepiece Dia18 extension L25, rack and pinion focusing. Objective Dia23, dust cover. Overall H160.

1742 (AALBUNIV LBH 9). Alidade for plane table. Telescopic.

Not signed.

1859. (inf).

Brass. 535x50x5. One chamfered edge.

Eccentric mounted telescope Dia23 L260. Eyepiece Dia19, rack and pinion focusing, extension L35. Objective Dia24. Crossed spirit levels on the base. Pillar Dia27-21. Overall H160. Made by Jünger, Copenhagen, July 1859 (inf).

1743 (AALBUNIV LBH 5). Alidade for plane table. Telescopic. Not signed. 1859 (inf).

Brass. 535x50x5. One chamfered edge. Eccentric mounted telescope. Dia23 L260. Eyepiece Dia19, rack and pinion focus. Objective Dia24. Pillar Dia27-21. Overall H160. Made by Jünger, Copenhagen, July 1859. (inf).

1744 (AALBUNIV). Level. Telescopic. Not signed.

Late 19th century (g).

Brass, black lacquered. Telescope Dia25 L280. Eyepiece Dia20, rack and pinion focusing. Objective Dia24. Spirit level above the tube Dia20 L125. Telescope base levelling by thumb screw and spring. Double circular base plates Dia75 with two springs and two screws. Mounted on boxwood pedestal. Overall H160.

1745 (AALBUNIV). Level. Telescopic. Signed: Cornelius Knudsen. Etablm. Kjöbenhavn. c1880 (g).

Brass. Telescope Dia28 L280. Eyepiece Dia19, rack and pinion focusing, extension L50. Objective Dia30. Spirit level Dia19 L150 above tube. Telescope base hinged at one end with micrometer screw at the other. Double circular base with two springs and two screws. Boxwood pedestal. Overall H170.

1746 (AALBUNIV). Theodolite.

Not signed.

c1900 (g).

Brass and oxidized brass. Telescope Dia28 L310. Eyepiece Dia18, rack and pinion focus. Extension L32. Objective Dia35. Y-bearings. Spirit level Dia17 L155 above tube. Base bracket hinged at one end with levelling screw at the other. Azimuth silvered scale 0-360° in 15 min divisions, two verniers to 30 sec with magnifiers. Tribach. Clamp and tangential screw. Vertical scale -25 to +25° in 0.5° divisions. Made by O. Sundby, Copenhagen (inf).

1747 (AALBUNIV). Theodolite.

Not signed.

c1860 (g).

Brass. Telescope Dia32-30 L360. Eyepiece Dia19 with rack and pinion focusing. Mounted in Y-brackets with yokes for fixing. Spirit level Dia23 L160 above the tube. Horizontal circle. Silvered scale 0-360° in 15 min divisions. Vernier. Probably made by Jünger. (inf).

1748 (AALBUNIV PLV 33).

Theodolite.

Signed: Th. Læssøe Müller / Köbenhavn / No 36.

c1900 (g).

Brass. Telescope Dia32 L300. Eyepiece Dia18 with rack and pinion focusing, extension L38. Objective Dia26. Mounted in Y-bearings. Spirit level Dia18 L115 above the tube. Tilting around the middle indexing on vertical scale 40-0-40°, no vernier. Horizontal scale 0-360° in 20 min divisions, two verniers to 30 sec. Two spirit levels, tribach with levelling screws.

1749 (AALBUNIV LBH 50). Level.
Telescopic.

Signed: Ertel & Sohn / München
c1860 (g).

Brass and oxidized brass. Telescope
Dia33 L320. Eyepiece Dia21, rack and
pinion focusing. Objective Dia30. Dust
cover. Y-bearings with locking yoke. Spi-
rit level Dia23 L170 above the tele-
scope. Cone for staff mounting. Turn-
ed boxwood stand Dia150 H130.

1750 (AALBUNIV LBH 37). Level.

Telescopic.

Not signed.

1884 (inf).

Brass. Telescope Dia25 L300. Eyepiece
Dia18, rack and pinion focusing.
Objective Dia36. Spirit level Dia18
L120 above telescope. Support hinged
at one end, levelling screw at the other.
Parallel base plates Dia75 with two
springs and two levelling screws.

1751 (AALBUNIV LBH 72). Level.

Telescopic.

Signed: TROUGHTON & SIMMS /
LONDON

Also in very small letters: "ANTIGUA
CASA OLIVA & SCHNABL / SCH-
NABL & Cia / BUENOS AIRES -
MONTEVIDEO

c1860 (g).

Brass. Telescope Dia40 L360. Eyepiece
Dia20, rack and pinion focus. Spirit level
Dia21 L220 above telescope. Fine verti-
cal adjustment using tool. Fine horizon-
tal adjustment with clamp. Tribrach.

1752 (AALBUNIV LBH 99). Level.

Y-type.

Signed: Georg Butenschön Bahrenfeld
Hamburg
c1900 (1890-1920 fl).

Brass and oxydized brass. Y-type,
locking yoke with catch. Telescope
Dia32 L340. Eyepiece Dia18, rack and
pinion focusing. Spirit level below the
telescope. Objective Dia35. Folding slit
and wire sights on the tube. Circular
bubble level in base of the instrument.
Tribrach.

1753 (AALBUNIV LBH 9).

Chain, surveyor's.

Not signed.

1908 (purchased for DCr 18).

20 metres long. Each link 25 centime-
tres. Iron. The links are joined by iron
rings Dia~15. Brass handles each end.
Two tellers (marked one and two
notches). Made by Cornelius Knudsen,
Copenhagen. (inf).

1754 (AALBUNIV). Theodolite,
simple.

Signed: Johann Christian Wolffius fecit
Leipzig
c1820 (g).

Brass. 278x278x4. Compass Dia150
with engraved silvered scale 16 points
and 0-360° in 30 min divisions. Needle
can be arrested. The brass plate is eng-
raved with four scales, (a) 0-360° in 5°
divisions; (b) 0.5° divisions, no figures,
corresponds to the outer scale at 1/2
divisions; (c) 1° divisions, no figures;
(d) 0-360° in opposite direction and
with 10° divisions. Fixed sights at 180-
360° with four pinholes and wire for
forward and reverse sighting. Similar
alidade sights with chamfered reading
edges. The scales allow for readings to
15 minutes. Ball and socket mounting.
Brass socket with bone lining. The
socket is rotatable by worm gearing
with wing screw.

1755 (AALBUNIV LBH 69).

Helioscope.

Signed: CORNELIUS KNUDSEN /
KJØBENHAVN

c1900 (g).

Oak base 520x100x27 with iron joint at the middle for staff mounting. At one end is a pillar H70 supporting a horizontal tube Dia20 with crosshairs. At the other end is a circular mirror Dia75 with sighting hole at the centre and mounted in rotatable stirrup. Another mirror, same dimensions and mounting, has a screw at the stirrup, presumably for mounting (in wood?). Fitted box of spruce 540x120x42, leather strap.

1756 (AALBUNIV LBH 48). Compass.

Deviation.

Not signed.

c1865 (g).

Brass base plate 190x95. Silvered scales at the small ends 30-0-30° in 1° divisions. Flat compass needle L152. Mahogany sides H26, glass cover. Mahogany sliding lid, arresting the needle when closed. Allegedly made by Jünger, Copenhagen, purchased second hand 1894.

1757 (AALBUNIV LBH 51). Alidade for plane table.

Not signed.

Mid 19th century (g).

Brass. 500x40x4,5. Two chamfered edges. Sights H170, each with two slits and two wires for reverse sighting. Two scales with transversals.

1758 (AALBUNIV LBH 8). Alidade for plane table.

Not signed.

Mid 19th century (g).

Brass. 482x37x5. No chamfered edge. Sights H175 each with two slits and two wires for reverse sighting. Two scales with transversals.

1759 (AALBUNIV LBH 91). Level.

Telescopic.

Signed: A. Frerk in Celle

1847 (description from supplier dated).

Brass. Telescope Dia30 L420. Eyepiece Dia20 rack and pinion focus. Objective Dia35. Push fit dust cover. The two telescope supports are of triangular cross section, adjustable in height and held by set screws. Central circular bubble level. Tribach with adjustable screws. Spirit level at the side of the tube. Overall H230.

1760 (AALBUNIV LBH 16). Level.

Telescopic.

Not signed.

c1860 (g).

Brass. Telescope Dia34 L350. Eyepiece Dia26, rack and pinion focus, extending L18. Objective Dia34. Spirit level Dia18 L170 above the tube. The tube supports are hinged at the front end; levelling by thumb screws at rear. Mounted on ball adjusted by four horizontal screws. Rotatable on cone, fixed by set screw. Made by Julius Nissen, Copenhagen (inf).

1761 (AALBUNIV LBH 7). Alidade for plane table.

Not signed.

Late 19th century (g).

Brass and oxidized brass. 574x42x5. Two sights, slit and wire. H160

1762 (AALBUNIV). Alidade for plane table.

Signed in the compass: No 60174. H R W

c1920 (g).

Oxidized metal (black). 650x55x5. One edge chamfered. Telescope Dia30 L320. Eyepiece Dia20, rack and pinion focus. Objective Dia30. Mounted on eccentric pillar H150. Silvered scale below the tube 50-0-50° in 0.5° divisions, vernier to 1 min, clamping set screw. Circular bubble level. Variation compass 135x30, scale 10-0-10° in 0.5° divisions. Scale on the rule 1:200 with transversals.

1763 (AALBUNIV). Alidade for plane table.

Not signed.

Late 19th century (g).

Brass. Rule 456x40x5 with two scales with transversals. Slit and wire sights, H150. Telescope Dia24 L410. Eyepiece Dia22, push fit focusing. The tube has conical ends, resting in V-notches at the top of the sights, so that longitudinal movement of the tube causes change of tilt.

1764 (AALBUNIV LBH 75). Alidade for plane table.

Signed: CARLSON & ÖSTERBERG / GÖTEBORG / 1294

1924 (acquired).

White metal rule L355. Scales 1:2000, vernier to 0.1 metre, and 1:4000, vernier to 0.5 metre. Spirit level. Needles for pricking. Telescope Dia38 L320. Eyepiece Dia18. Objective Dia30 with rack and pinion focusing. Range finding by two wires. Allegedly fitted with "Porro's lens" (?).

1765 (AALBUNIV). Theodolite, plain. Not signed.

Mid 19th century (g).

Brass. Telescope Dia26 L240. Eyepiece Dia18, rack and pinion focusing. Objective Dia22. Vertical silvered scale 55-0-55° in 0.5° divisions. Vernier to 1 min. Tangent screw. Horizontal scale 0-360° in 0.5° divisions, vernier to 1 min. Magnifier. Moved by pinion and gear wheel. Cone for staff mounting with set screw.

1766 (AALBUNIV LBH 81).

Theodolite, simple.

Signed: TH. ROSENBERG / BERLIN 854

1901 (purchased for DM 361,50).

Brass, oxidized brass. Telescope Dia29 L230. Eyepiece Dia20, rack and pinion focusing. Objective Dia30. Spirit level parallel to axle above telescope supported by open A-frame. Azimuth circle, Dia170, covered except for two windows, scale 0-360° in 15 min divisions, two verniers to 1 min. Tangent adjustment and clamp. Tribrach. Circular bubble level. Overall H360.

1767 (AALBUNIV LBH 31).

Theodolites, simple. Two.

Not signed.

1882 (acquired).

Brass, oxidized brass. Telescope Dia22 L100. Eyepiece Dia15, push focus, extending L20. Objective Dia17. Reversible sighting. Concealed horizontal scale, except for two windows with verniers at 90° distance. Scale Dia135 with 0.5° divisions, vernier to 1 min. Magnifiers. Tangential screw and clamp. Spirit level Dia14 L75 mounted on the base. Allegedly made by Jünger (fl c1850-68).

1768 (AALBUNIV LBH 30).

Theodolite, simple.

Signed: HILDEBRAND. FREIBERG

i/S / No 3749

c1870 (g).

Brass, oxidized brass. Telescope Dia45 L480. Eyepiece Dia24, rack and pinion focus. Striding spirit level. Open horizontal silvered scale Dia210, 0-360° in 5 min divisions, no verniers, but microscope reading with micrometer. Accuracy claimed to be 0.4 sec. Tangent screw and clamp. Three level feet.

1769 (AALBUNIV LBH 80).

Theodolite, transit.

Signed: TH. ROSENBERG / BERLIN 855

c1900 (g).

Brass, oxidized brass. Telescope Dia29 L230. Eyepiece Dia20, rack and pinion focus. Objective Dia29. Overhead compass, Dia120 with silvered scale 0-360° in 0.5 deg divisions, arrestable needle. Vertical circle Dia110, scale 0-90-0-90° in 0.5° divisions, two verniers to 1 min, diametrically opposite. Spirit level. Concealed horizontal scale, Dia150, 0-360° in 15 min divisions, two diametrically opposite windows with verniers to 0.5 min. Tribrach, feet adjustable by screw and clamp.

1770 (AALBUNIV LBH 124).

Theodolite, simple.

Signed: Max Hildebrand früher Aug Lingke u Co / HILDEBRAND-REISS-WICHMANN-WERKE / G.m.b.H. / Freiberg – Sachsen / No59828.

c1900 (g).

Oxidized brass. Telescope Dia25 L200. Eyepiece Dia18, rack and pinion focus. Objective Dia26, dustcover missing.

Three spirit levels. Concealed horizontal scale 0-360° in 20 min divisions, two diametrically opposite windows with verniers to 1 min. Tangential screw and clamp. Tribrach.

1771 (AALBUNIV LBH 88). Level.

Signed: TH. LÆSSØE MÜLLER
KØBENHAVN No 1.

c1900 (g).

Brass. Telescope Dia30 L300. Eyepiece Dia17, rack and pinion focus. Objective Dia28. The tube pivots around the middle with adjusting screws at both ends. Spirit level Dia17 L150 above the tube. Circular bubble level. Tribrach, feet adjustable by screw and clamp.

1772 (LANDCOPE). Globe. Black for drawing with chalk.

Not signed.

c1900 (g).

Dia300. Brass meridian with scale 90-0-90°. Red lines on the globe for latitude and longitude in 10° divisions. Turned wooden pillar with three feet. Overall H600.

1773 (LANDCOPE). Telescope.

Refracting.

Signed: Steinheil in München No 44906

c1860 (fl).

Tube Dia80 L1075. Objective lens Dia74 with push fit dust cover. Eyepiece L230 with rack and pinion focus. Mounted with two thumb screws on brass pillar Dia60 L530 ending in threads indicating missing base. Various accessories: lenses, prism etc, probably not original, at least incomplete. Wooden box, fitted, 1130x235x150.

1774 (LANDCOPE).

Archimedian spiral.

Not signed, but probably made by

Weitzmann (catalogue 1911 fig 34).

c1910 (g).

Black painted sheet iron basin 240x90 on four feet. High end H160, low end H80. Black painted copper tube spiral mounted on slant with axle resting in recess below and V-notch at top end. Brass crank. Spiral L210 Dia60

1775 (LANDCOPE Vtr Lbh fys Smlg No 46). Centrifugal machine.

Not signed.

c1900 (g).

Wooden base 610x330. Wooden wheel Dia450 with handle as crank. Brass fittings. Three attachments, (a) sphere of four steel springs (demonstrating the Earth's flattening at the poles) Dia260; (b) two whirling buckets L360; (c) Savard's wheel Dia140. More accessories probably missing.

1776 (LANDCOPE Vtr Lbh fys Smlg No 24). Worm gear.

Signed: Fra Prof Smith's Etablissement / KJØBENHAVN

c1820 (g).

Wooden base Dia200 and pillar H200. Brass frame with bearings for gear Dia95 and pulley Dia10 L30. Worm steel gear with brass crank.

1777 (LANDCOPE). Gyro.

Signed: J. Nissen

c1850 (g).

Two wheels Dia87. Two wheels Dia54 (probably not original). Brass foot with steel point. Wooden handle for pulling cord.

1778 (LANDCOPE). Piezometer.

Compressibility of water. Ørsted's apparatus.

Not signed (probably made in the workshops of the Polytechnical University, Copenhagen).

Mid 19th century (g).

Glass vessel Dia100 H280 is fastened to wooden base plate 310x310 by a wooden collar Dia245 holding the foot of the glass vessel. At the top is a brass collar with a cylinder Dia48 L130 and piston, which can be operated by a screw with a crank. The instrument is not complete, as the internal glass container and manometer is missing.

Ref: Meyer, vol 2 p 310.

1779 (LANDCOPE). Dipping needle.

Signed: FERD. ERNECKE / BERLIN

c1860 (fl after 1859).

Brass tripod with level screws. Brass pillar H60 supports horizontal circular silvered scale Dia205, 360° in 1° divisions, vernier to 5 min. On this is a rotatable brass frame with vertical silvered circular scale 0-90-0-90° in 1° divisions, no vernier. Spirit level. Overall H490.

1780 (LANDCOPE 6.4.9) Pressure gauge.

Signed: C.F.SCHLÜTER / KJØBENHAVN

c1900 (g).

Brass house Dia125 H45 with flange Dia148. Bourdon tube measuring element. Face white with black writing. Scale 0-10 and 0-150 no units, but probably atmospheres and pounds per sq in. Mounted with brass tubing, stop cock and condensate glass.

1781 (LANDCOPE 5.3.6)
Thermometer, differential.
Not signed.
c1900 (g).

Wooden base Dia120. U-shaped capillary H300 W80 with bulbs at each top. These have neck and glass stopper for filling with spirit. Mounted on wooden frame. Two porcelain scales 100-0-100. Overall H440. Marked "Differential-thermometer".

1782 (LANDCOPE FL/29)
Saccharimeter.
Signed: Franz Schmidt & Haensch /
BERLIN / No 3878
c1870 (g).

Iron tripod. Brass pillar Dia20 H230. Horizontal brass tube Dia38 opens for insertion of glass tube with fluid to be analyzed. Tube L400. Nicol prisms to be rotated by pinion and gear. Scale Dia175 0-360° in 30 min divisions, vernier to 1 min. Reading by two diametrically opposite placed magnifiers. Zero adjustment for prism. Overall L520 H440. Four Glass tubes for specimen fluids.

1783 (LANDCOPE). Galvanometer.
Signed: CORNELIUS KNUDSEN /
KJØBENHAVN
c1890 (g)

Astatic. Brass tribrach with level screws support circular brass base Dia105 on which a glass cylinder Dia105 with lid made of brass with central brass fitting for supporting torsion wire. Inside the glass cylinder is a circular silvered scale Dia60 divided 0-90-0-90°. Magnet needle and torsion wire missing. Four electric terminals. Two coils.

1784 (LANDCOPE). Thermometer.
Deep sea.

Signed: Negretti & Zambra's Patent
Deep Sea Thermometer 66354
1889 (attached certificate).

Brass frame, green lacquered, with mercury-in-glass thermometer in brass housing. Three copper vanes to make the instrument rotate, when passing through the water. Overall L370.

1785 (LANDCOPE). Hygrometer.
Daniell's.
Not signed.

1844 (written on the thermometer).
Wooden base Dia92. Wooden pillar H170 with thermometer -25 to +55°C. Lower bulb Dia32 (dark, but no golden band). Upper bulb Dia30. Muslin cover missing. Internal thermometer -15 to 105°C.

1786 (LANDCOPE). Discharge tube.
Geissler.
Not signed.
Mid 19th century (g).
Glass maximum Dia100 L480. Internal fancy glass tubing. Wooden base Dia80.

1787 (LANDCOPE). Discharge tube.
Geissler.
Not signed.
Mid 19th century (g).
Glass max Dia60 L300. Internal fancy glass tubing (bulbs, spiral). The space between the glass tube and the bulb can be opened to atmosphere by a spout with cork stopper.

1788 (LANDCOPE). Galvanometer.
Tangent.
Not signed.
Mid 19th century (g).

Mahogany tripod with brass level screws. Copper ring Dia200, cross section 10x3. Magnetic needle L38, index arm L150, silvered scale 0-360°. Overall H310.

1789 (LANDCOPE). Telescope.

Gregorian.

Signed: S. JOHNSON / Luitgate Street / LONDON

Early 19th century (g).

Brass tube Dia45 L370. Eyepiece Dia25 L80. Long screw for focus of secondary mirror. Screw fit dust cover. Mounting stand missing.

1790 (LANDCOPE). Telescope.

Gregorian.

Signed: NAIRNE Cornhill, London.

c1800 (g).

Brass tube Dia105 L655. Screw fit eyepiece Dia32 L100. Dust cover missing. Long adjusting screw for secondary mirror. Viewfinder Dia24 L250. Push fit dust cover for eyepiece. The tube is mounted with wing screws on semicircle; altitude adjusted by worm gear. Ivory handle. Azimuth adjusted by wing screw with ivory wing. Folding tripod with cabriole feet. Overall H550.

1791 (LANDCOPE). Air pump.

Vacuum.

Not signed.

Early to mid 19th century (g).

One cylinder Dia55 L200. Operated by a lever L500 which via a parallelogram moves a yoke connected to the piston. Probably double acting; a tube Dia8 connecting the top of the piston with the bottom. Mercury vacuum manometer. Glass plate Dia250. Overall L500 H350. Similar to no 1073.

1792 (LANDCOPE). Barometer.

Marine. Cistern.

Signed on the cistern: E. Jünger / Kjöbenhavn Kl.V.L.

c1860 (fl).

Gimbals at the top. Brass case Dia23 L1005. Cistern Dia60 with glass section for viewing mercury surface; ivory point for zeroing. Scale 675 to 830 mm in 1 mm divisions with vernier to 0.1 mm. Reading telescope Dia15 L70 with push focusing. Telescope moves up and down by rack and pinion. Spirit level. Adjusting thumb screw below.

1793 (LANDCOPE). Barometer.

Aneroid.

Signed: Metal Barometer / uden Ejeder / Julius Nissen's Etablissement, Kjöbenhavn.

c1850 (fl).

Brass case Dia125 H55 with glass front. Bellows Dia~70. Apparently no spring adjustment (zero) or temperature compensation. Scale 26.6 to 29.6 in 1/24" divisions. "Foranderligt" (change) at 28 inch.

1794 (LANDCOPE). Barometer. Bulb cistern.

Signed: BAROMETER / Julius Nissen / Kjöbenhavn

c1850 (fl).

Walnut case H980. Sliding cover for lower branch. Glass window at top. Silvered scale 26-30 in 1/12 divisions. "Ustadigt" (change) at 28. "Bestandigt" at 19, "Regn eller Storm" at 27. Vernier. Thermometer, red spirit -20 to 50° Reaumur.

1795 (LANDCOPE). Heliostat.

Not signed.

c1900 (g).

Clock-driven mirror. Mahogany base 230x110 with three brass feet. Two level screws. Spirit level Dia40. Hinged along the short side is a mahogany case 175x105x60 with brass cover. The case can be elevated, elevation read on a brass scale and fixed by clamp. A mirror Dia65 is mounted in stirrup on a pillar on the brass cover. An index on the pillar points to a scale I to XII twice. The mirror can be set for declination, scale 90-0-90°. Spring wound clock.

1796 (LANDCOPE). Clock. Model.

Not signed.

c1900 (g).

Anchor regulator. Iron tripod, pillar holding open frames supporting the clock mechanism. Spiral spring balance. Weight driven. Overall H430. Probably made by Max Kohl.

1797 (LANDCOPE). Theodolite (?).

Signed: aus Jena / Pk 12,5 x (16)

c1900 (g).

Brass tripod with level screws. Sturdy brass column Dia55 rotates in Azimuth, can be clamped in any position, fine adjustment by counteracting screws, but no scale. Telescope tube Dia45-55 L230 moving in altitude; no scale. Objective lens Dia55 with dust cover. Overall H260. Possibly incomplete.

1798 (LANDCOPE 47 Vtr Lbh fys

Smlg) Gyro.

Not signed (probably made in own workshop).

c1950 (g).

Iron base Dia150. Brass pillar Dia26 H180. Gimbal mounted iron rod Dia7 L350 with cast iron ring Dia125 and

brass gyro wheel Dia100 at one end and adjustable counterweight at the other. The brass wheel has notches cut at the rim, for acceleration by compressed air. The wheel is supported by ball bearings.

1799 (LANDCOPE). Steam engine.

Rocking arm. Model.

Not signed, except: oblong stamp on the boiler, with three(?) interlinked letters, illegible.

Mid 19th century (g).

Double acting. Copper boiler Dia140 L450. Mounted on four walls. Iron tray for heating by spirit. Brass sphere Dia28 safety valve resting on a seat of an opening at the top of the boiler. Steam tube Dia18 with stopcock. Brass and copper cylindric slide valve Dia84 L200. Condenser. Beam black painted brass L500 on brass pillar with brass bearing at the top. Parallelogram for piston movement. Flywheel cast iron Dia450. Overall dimensions: 900x700x550.

1800 (LANDCOPE). Spectroscope.

Direct vision.

Signed: CORNELIUS KNUDSEN 7 KJØBENHAVN.

c1900 (g).

Brass collimator and telescope tube Dia14 with adjustable slit. Brass scale tube Dia14. Push focus. Leather covered central section with glass prisms for refraction and for 90° reflection. The telescope tube is hinged with two screws to allow angular movement sufficient for viewing the complete spectrum. Overall L170. Fitted box 200x78x32 with ornamented leather cover and dark blue velvet lining.

1801 (LANDCOPE). Spectroscope.

Signed: A. Krüss / Hamburg.

c1860 (g).

Collimator tube Dia42 L300. Adjustable slit with micrometer to 1/500 mm. Three 60° glass prisms in series giving a total refraction angle of about 350°. Scale tube Dia35 L110. Rack and pinion focusing. Iron tripod. Overall H400. Silvered scale 0-360°.

1802 (LANDCOPE). Fall machine,

Atwood's.

Not signed.

c1960 (g).

Triangular wooden base, side 550 with brass level screws. Wooden upright, cross section 38x45 L1700 with black and white painted cm-scale. A wooden platform at the top has frictionless bearing with four brass wheels Dia80 and grooved brass wheel for cord with weights.

Made at own workshop by Poul Streander (employed 1933-74) (inf).

1803 (LANDCOPE). Barometer.

Siphon.

Signed: F.C.JACOB / KØBENHAVN

c1930 (g).

Wooden base plate 1000x60x17. The long branch of the tube is S-shaped. Mirror reading. Scale on the glass 660-860 mm in 1mm divisions. The short branch L300 has mirror reading. Scale on the glass 0-200 mm. Thermometer -5 to 33°. Scale is engraved "inch".

1804 (LANDCOPE LBH 13).

Theodolite. Transit.

Not signed.

c1880 (g).

Brass and oxidized brass. Tribrach, screw feet levelling. Horizontal circle Dia175, silvered scale 0-360° in 10 min divisions, two diametrically opposite reading telescopes with micrometers to 6 sec, clamp and tangential screw. Y-bracket supports an axle with telescope outside the bracket at one end and the vertical scale at the other end. Telescope Dia27 L300. Vertical scale Dia140 graduated 0-360° in 10 min divisions and vernier to 10 sec. Striding spirit level.

1805 (LANDCOPE LBH 123).

Theodolite, simple.

Signed: Max Hildebrand früher Aug. Lingke u. Co. / HILDEBRAND-REISS-GmbH-WICHMANN-WERKE / FREIBERG / SACHSEN / No 58493

c1900 (g).

Oxidized brass. Tribrach with levelling screws. Crossed spirit levels. Concealed scale (illegible) visible through one window, Clamp and tangential screw. V-support for telescope axle with striding spirit level. Telescope Dia25 L200.

1806 (LANDCOPE LBH 125).

Theodolite, simple.

Signed: HILDEBRAND-FREIBERG I/S / No 4029

c1900 (fl).

Brass and oxidized brass. Tribrach with clamped levelling screws. Horizontal circle Dia170 with scale 0-360°, details not legible; clamp and tangential screw; two reading telescopes. Crossed spirit levels. U-support of telescope axle. Striding spirit level. Telescope Dia30 L320 with rack and pinion focusing.

1807 (LANDCOPE LBH 43).

Theodolite, simple.

Not signed.

Late 19th century (g).

Brass and oxidized brass. Concealed horizontal scale 0-360° in 0.5° divisions visible through one window. Vernier to 1 min. Magnifier. U-frame for telescope axle. Telescope Dia25 L150, eyepiece Dia18, rack and pinion focusing, objective Dia26.

1808 (LANDCOPE LBH 106).

Theodolite, simple.

Signed: TH. ROSENBERG / Jrh: W.

Lummert / BERLIN 2445

c1910 (g).

Oxidized brass. Tribrach, levelling screws with clamp. Concealed scale illegible, two windows. U-support of telescope axle, reversible. Telescope Dia25 L190. Eyepiece Dia18. Objective Dia28.

1809 (LANDCOPE LBH 32).

Theodolite, transit.

Signed: HILDEBRAND. FREIBERG /

SA / No 18434

c1900 (fl).

Oxidized brass. External threads for staff mounting. Horizontal scale Dia85, vernier, magnifier. Two spirit levels. Telescope and vertical scale at opposite ends of the axle, outside the bearings. Telescope Dia22 L135. Prismatic eyepiece Dia16, rack and pinion focusing. Vertical scale Dia100; concealed scale with two windows.

1810 (MEDIHIST 413)

Ophthalmometer.

Signed: Ophtalmometre / Haval /

Modèle 1889 / No 413 /

A. Goubeadec (?) / Paris

c1890 (g).

Iron tripod with one level screw. Brass pillar Dia31 H270. Telescope Dia40 L100 and Dia22 L100. Brass arc L400 graduated 40-0-40 and another non-linear scale 6-7-8-9-10 in 1/10 divisions. Overall H600.

1811 (MEDIHIST MC 16415)

Photometer for measuring eyesight in twilight.

Signed: CORNELIUS KNUDSEN /

KJØBENHAVN

c1925 (g).

Iron tripod. Brass pillar Dia25 H140. Wooden box 330x230x170 with hinged lid. Mounted on left side of one end is a lamp house on an opening to the box. The opening is adjustable to let more or less light into the box. Next to the lamp are two view-holes with internal shields to cover none, one or both openings. Inside the box is a table of letters for observation.

1812 (MEDIHIST 10601)

Colour-sense tester.

Signed: FREDERIK PREISLER /

KJØBENHAVN

c1900 (g).

Gordon Norries original lamp-apparatus. Wooden base Dia270. Wooden pillar Dia25 H260. On this is a wooden platform with a candle-lamp and a vertical screen 255x255 with a sighting hole in front of the candle. Pair of coloured glass, (a) red and green, (b) shades of grey. Overall H550

1813 (MEDIHIST 12981) Induction coil.

Sign: CAMILLUS NYROP'S ETABL. /

KJØBENHAVN / KJØBMAGERGADE

43

c1900 (g).

For electrotherapy. Mahogany box and base plate 220x110 with coil Dia40 L77. Brass fitting. White metal hammer interrupter. Two cushion electrodes, brass with wooden handles.

1814 (MEDIHIST). Galvanometer.
Signed: G.W.KLEIN / KJØBENHAVN
c1900 (g).

Mahogany case 150x50x160. The back slides open. Two coils 90x15x15 on wooden frames. Silvered circular face Dia95, scale 0-90-0-90, pointer L75.

1815 (MEDIHIST). Unknown ophthalmic instrument (?).
Signed E. JÜNGER KJØBENHAVN
c1865 (g).
Tripod with brass pillar Dia25 H240. Jointed bracket supports a brass tube Dia35 L150, ending in a brass box 95x85x60. On each side of this is a micrometer screw with scale 0-60 in 0.1 divisions, vernier to 0.01. Inside the box are two mirrors, rotatable from outside via gears by means of a key. The mirrors rotate simultaneously in opposite directions when operated by the key, but may be adjusted individually by the micrometer screws. The mirrors are about 10x20 in sturdy mountings. Opening Dia30 in the brass box allows light to pass through the instrument to the eyepiece.

1816 (AALBUNIV LBH 104).
Theodolite, transit.
Signed: Max Hildebrand früher Aug
Lingke u. Co / G.m.b.H / Freiberg
Sachsen / No 64951.
c1900 (g).
Oxidized brass. Telescope Dia25
L210. Eyepiece Dia18. Objective

Dia25. Spirit level below the tube. Vertical scale concealed except for two diametrically opposite windows. Verniers to 1 min; magnifiers. Horizontal circle concealed except for two windows diametrically opposite. Verniers to 30 sec; magnifiers. Tribrach, screw level feet.

1817 (AALBUNIV). Theodolite.
Signed: TH. A. NEERGAARD / MEK.
ETABL. / KJØBENHAVN
c1900 (g).
Brass, oxidized brass. Telescope Dia30
L310. Eyepiece Dia19, rack and pinion focus. Objective Dia32. Spirit level above tube Dia20 L150. Y-supports for the telescope axle. The vertical scale is not divided, but clamp and tangential screw is there. Horizontal circle concealed except for two diametrically opposite windows with verniers and magnifiers. Scale very difficult to read. Clamp and tangential screw. Male threads for staff mounting. Three screw level feet.

1818 (AALBUNIV LBH 129).
Theodolite.
Signed: TH. ROSENBERG BERLIN /
1024
c1900 (g).
Oxidized brass. Telescope Dia28 L240. Eyepiece Dia20, rack and pinion focusing. Objective Dia28. Y-mountings. Striding spirit level Dia18 L110. Vertical scale 20-0-20° in 1° divisions. Horizontal scale concealed except for two diametrically opposite windows. 0.5° divisions, vernier to 1 min. Clamp and tangential screw. Circular bubble level. Male threads for staff mounting. Three screw level feet.

1819 (AALBUNIV LBH 126).

Theodolite, simple.

Signed: TH. LÆSSØE MÜLLER /
E.A. THIELE / KØBENHAVN / 112
c1900 (g).

Brass, oxidized brass. Telescope Dia30 L210. Eyepiece Dia18, rack and pinion focusing, extending L35. Objective Dia27. No vertical circle. Horizontal scale concealed except for two diametrically opposite windows. Scale in 20 min divisions, vernier to 1 min. Magnifiers. Clamp and tangential screw. Crossed spirit levels Dia15 L70.

1820 (AALBUNIV LBH 87).

Theodolite, simple.

Signed: HILDEBRAND FREIBERG i/
S / No 3762

1908 (acquired).

Brass, oxidized brass. Telescope Dia26 L220. Eyepiece Dia18, rack and pinion focus. Objective Dia26. Spirit level Dia15 L90 on the tube axle and below the tube. No vertical scale. Horizontal circle concealed except one window. Scale in 2 min divisions; microscope reading to 0.2 min. Female threads for staff mounting. Three screw level feet with clamp. Overall H290.

1821 (AALBUNIV LBH 7).

Theodolite, simple.

Not signed (probably Danish by Sundby).

c1900 (g).

Brass, oxidized brass. Telescope Dia45 L320. Eyepiece Dia21, rack and pinion focusing. Objective Dia40. Push fit dust cover. Y-supports mounted on cradle with pivot at one end and with micrometer adjustment at the other. Spirit level above the tube, with oblong mir-

ror tilting around the middle for viewing the bubble from the eyepiece. Open horizontal silvered scale 0.5° divisions; two verniers to 1 min with magnifiers diametrically opposite. Tribrach with screw level feet.

1822 (AALBUNIV LBH 105).

Theodolite, simple.

Signed: Max Hildebrand früher Aug
Lingke u. Co / G.m.b.H /
Freiberg/Sachsen / No66548
c1900 (g).

Oxidized brass. Telescope Dia25 L200. Eyepiece Dia18, rack and pinion focus. Objective Dia24. Spirit level. No vertical scale. Horizontal scale concealed except one window. Scale with 20 min divisions, microscope reading to 2 min. Socket with female threads for staff mounting. Three screw level feet with clamps.

1823 (AALBUNIV LBH 6).

Theodolite, simple.

Signed: Otto Fennel Söhne in Cassel
1902 / No5438
1902.

Brass, oxidized brass. Telescope Dia27 L210. Eyepiece Dia17, rack and pinion focusing. Horizontal scale Dia150, 20 min divisions. Vernier to 0.5 min. Magnifier. Two spirit levels Dia12 L65. Clamp and tangential screw. Male threads for staff mounting. Three screw level feet.

1824 (AALBUNIV LBH 14).

Theodolite, simple.

Not signed.

1857.

Brass, oxidized brass. Telescope Dia24

L210. Eyepiece Dial8, rack and pinion focusing. Striding spirit level. Horizontal scale concealed except for two windows at 90° distance. 20 min divisions, vernier to 0.5 min. Clamp and tangential screw. Case and staff. Made by Jünger, Copenhagen, 1857 (inf).

1825 (AALBUNIV). Planimeter.
Signed: H. AUSFELD / IN / GOTHAC1871 (acquired).
"Wetli and Hansen's construction". White metal and brass. Open brass frame 330x130 on three screw level feet. On this a trolley 240x210 on three wheels runs in grooves. On this again, and perpendicularly, a frame L440 moves with the tracer point. A circular plate Dial38 moves under the friction wheel, operating the register. This has a silvered dial Dia96 with pointer. Scale 0-14000 and two windows with units and decimals.

1826 (AALBUNIV LBH 3).
Planimeter. Polar. Amsler's.
Signed No3490.
Made by Amsler in Schaffhausen (inf).
1863 (acquired).
Brass and steel. L235 including point. Pivot in sleeve for side arm ending in point to be stationary. Friction wheel Dial9 with 100 divisions on the periphery. Vernier. The axle of the friction count wheel ends in worm driving a cog on the axle of a second scale wheel (disc) divided 0-9. Main limb has marks 20590; 20910; 4CE; 1:400; 0,2CE; / 5CE; 1:100; / 1:500; 2CE; / 1:400; 0,1CE; / 1:100; 1CE; / 1:400; 0,1CE; / 1:100; 1CE; / 1:400. Box 270x47x35 covered with black fishskin; fitted; mauve velvet lining.

1827 (AALBUNIV LBH 7).
Planimeter. "Coradi's precision planimeter".
Signed: G. CORADI. ZÜRICH / No 1700
1903 (acquired). The glass tracing head is fitted 1933.
White metal bar L360; cross section 8x8. Glass magnifier tracing head. The bar divided 8 to 68 over a length of 290 millimetres. The movement of the tracing point is transferred to the friction count wheel moving on a paper-covered aluminium disc Dial30, which on the under side has a small gear in engagement with the teathed periphery of a heavy brass disc Dial48 H20, which is stationary. The count wheel is graduated 0 to 99 with vernier to 0.1. Worm and cog turns secondary pointer on scale 0 to 40. Box 410x210x90 with black fishskin cover, brass lock and handle; fitted; mauve velvet lining.
Ref: Nyholm p176.

1828 (AALBUNIV LBH 1).
Planimeter. "Coradi's disc-roller planimeter".
Not signed.
A brass frame L200 has at each end and on a common axle a wheel Dia30, rolling over the map during operation. The movement rotates an overhead aluminium disc Dial30, on which the graduated friction wheel moves. Scale 0-99 with vernier. Worm and cog to secondary rotating disc graduated 0-24. Tracing point at the end of a white metal bar 5x5. The bar adjustable in sleeve graduated 0-170 mm. Made by O. Sundby, Copenhagen
1894 (inf)
Ref: Nyholm p180.

1829 (AALBUNIV LBH 6). Planimeter. "Coradi's ball-roller planimeter". Signed: G. Coradi Zürich / No 1392 1900 (purchased for DCr 180).

Two rollers Dia50 on common axle moves over the map. Their movement and the swing of the tracing arm are transferred to a white metal sphere operating a small graduated cylinder with vernier.

Ref: Nyholm p179.

1830 (AALBUNIV LBH 55). Sextant. Box.

Signed: F.W.Breithaupt & Sohn in Cassel

1865 (inf).

Brass and glass. Cylindrical brass house Dia95 H48. Silvered Dial under glass, scale -5 to 140° with 0.5° divisions, vernier to 2 min. Index arm L62 with vernier. Magnifying lens. Circular spirit level.

1831 (AALBUNIV LBH 60). Douglas reflecting protractor.

Signed: O. Sundby

Before 1897 (purchased second hand). Brass. Two mirrors, one connected to a sighting arm, the other to an index arm with vernier and magnifying lens. Fine adjustment by tangential screw. Silvered scale 0 to 130 with 0.5° divisions, vernier to 1 min. Overall L110, radius 55.

1832 (AALBUNIV LBH 10).

Circumferentor or simple theodolite.

Signed: P. Korfitsen / Kjöbenhavn c1880 (g).

Mahogany plate 177x210 with inlaid brass circumferentor Dial40. Fixed slit and wire sights; alidade with double slit

and wire sights for forward and reverse sighting. Scale 0-180-0° with 1° divisions. Built-in variation compass 130x33, brass with silvered scale 10-0-10° in 1° divisions. Glass broken. Mounted on the other side of the mahogany plate is ball and socket for staff mounting. The instrument covered by protecting mahogany lid, leaving the staff mounting socket open.

1833 (AALBUNIV). Protractors.

Three.

Not signed.

Late 19th century (g).

Semicircular. Brass, (a) Rad57 L123 with transversals; (b) Rad52 L120, scale 1:1000 with transversals; (c) Rad37 L90, scale 1:1000 with transversals.

1834 (AALBUNIV). Protractor.

Circular.

Signed: CORN. KNUDSEN / KJØBENHAVN.

1905 (purchased).

(Danish: "Polarkoordinatograf"). White metal. Rule with two scales and pricking needle, (a) 360-0-120° in divisions of 8, vernier to 1; (b) 90-0-30° in divisions of 1, vernier to 0.1. This rule is mounted as diameter of a circle, which can rotate in another circle with scale and vernier. Scale 0-360° in 0.5° divisions; vernier to 2 min. Overall Diameter 162.

1835 (AALBUNIV). Protractor (?).

Circular.

Signed: LINNERS "DISTANCECIRKEL" PATENT

c1900 (g).

With sighting vane. (Danish: "Distance-cirkel"). Linner's patent. White metal.

Rule with two scales, (a) 1:4000, vernier to 0.5 metres; (b) 1:8000, vernier to 1 metre. This rule is diameter in a circle on which a sighting arm is fitted on two studs. Distance between sights is 246 millimetres. The circle rotates inside another circle, graduated 0-360° in 1° divisions; vernier to 0.1°.

1836 (AALBUNIV LBH 70).

Protractor.

Not signed.

Late 19th century (g).

Brass. Semicircular. Dia 174. Adjustable arm L266. Scale 0-180° in 0.5° divisions. Vernier to 1 min. Clamp. Chamfered edge.

1837 (AALBUNIV). Douglas

reflecting protractor.

Not signed (probably made by O.

Sundby; cf item 1831)

Late 19th century (g).

Brass. For sighting and plotting. Two mirrors, both on moving arms connected by a sliding linkage. Silvered scale 0 to 130° with 0.5° divisions, vernier to 1 min. Magnifier. Overall L110, radius 55. Brass handle Dia 18 L80.

Ref: Hambly, p 93.

1838 (AALBUNIV).

Pair of quick-setting compasses.

Not signed.

c1900 (g).

Possibly for marking points by map drawing. Brass. Base 45x40 with sturdy upright H60 holding a vertical steel rod with a brass cone holding two small ink-drawing heads with the point at the tip of the cone at level with the base, so that a point may be pricked and marked by two small quarter-circles when

pressing the rod with the cone down against a spring. Overall H85.

1839 (AALBUNIV). Cross-head.

Not signed.

Late 19th century (g).

Brass. Octagonal, 60 mm across H75.

Four sights, set at 45° angle. Slit-slit pair at 90°, and slit-wire pair at 90°. Brass handle L70 as socket for staff mounting.

1840 (AALBUNIV LBH 30).

Ordinatograph.

Not signed.

c1900 (g).

Draughting aid for plotting ordinates. White metal rectangle 330x150. Two parallel rules at the long sides. one divided 0-400 and 400-0 over a length of 200 millimetres, and the other divided 0-200 and 200-0. Between them a sliding bridge with a vernier 1:10. The bridge itself has similar scales over a length of 60 mm, also with vernier. Magnifiers.

1841 (AALBUNIV). Calculator.

Thacher's cylindrical slide rule.

Signed: Keuffel & Esser Co, New York c1885.

Mahogany base 545x145. Cylinder Dia 125 with 40 scales on 20 triangular bars along the cylinder surface. A coaxial cylinder with corresponding scales slides inside. The total operating length allows for accurate reading of 4 decimals.

Ref: G. Turner I, p 289.

1842 (AALBKATE). Percussion

apparatus. Mariotte's.

Not signed (probably made locally).

c1900 (g).

Wooden base 335x180 with two wooden gallows H318 at distance 140 mm. Between these gallows are suspended six ivory spheres in thin cords, forming a V. Five spheres Dia25 and one Dia18. Brass thumb screws for adjusting height.

1843 (AALBKATE).

Rotation apparatus.

Not signed.

c1910 (g).

Cast iron frame, painted to look like wood. Open guitar-shaped frame on three integrally cast iron feet. Stands on two feet only when in upright position. Heavy cast iron wheel Dia260 with crank. Belt drive to small grooved wheel Dia40. Overall L620, W250. Accessory: Seebeck siren iron plate, serrated and with three rows of holes at various radii. More accessories probably missing.

1844 (AALBKATE). Siren.

Cagniard de Latour type.

Not signed.

Mid to late 19th century (g).

Brass cylinder Dia60 H70. Air inlet below Dia24-20 L60. Rotating disc Dia60 with 24 holes on slant. Steel axle. Two brass supports for gear house 87x55 above. On the reverse a glass cover makes the gears visible. Front with two silvered dials, left Dia38 divided 20, 40, 60, 80, 100, right divided 1000, 2000, 3000, 4000, 5000. Worm gear drive of left dial, having a pin forwarding the right gear one step at each rotation. Turned wooden stand Dia142.

1845 (AALBKATE). Resistance box.

Signed: CORNELIUS KNUDSEN

c1900 (g).

Mahogany 230x55x75. Ebonite top 225x50x12. Brass conductors and stoppers. For 0.1, 0.2, 0.2, 0.5, 1, 2, 2; 5 Ω

1846 (AALBKATE). Gyroscope.

Fessel's gyroscope.

Signed: J. NISSEN

c1860 (g).

Brass, lead-weighted base Dia80 with steel point H115. Wheel Dia100. Steel spindle with conical pivots, rotating inside brass ring Dia120 with counterbalance brass weight Dia25 L67 sliding on brass rod L235 and held by set screw. This application of the gyro is invented by F. Fessel 1853 to investigate precession and nutation.

1847 (AALBKATE). Dip circle.

Not signed.

Mid to late 19th century (g).

Tribrach with three levelling screws. Brass horizontal scale Dia80, graduated 0-90-0-90° with 1° divisions. Brass pillar H200 rotatable by worm gear at the base. Plumb bob. Silvered circular scale Dia100 graduated 0-90-0-90° in stirrup; rotatable between horizontal and vertical.

1848 (AALBKATE). Theodolite, transit. Educational.

Signed: E. Leybold's Nachfolger /
Cöln a/Rh

c1900 (g).

Brass. Telescope Dia24 L170, reversible. Fixed eyepiece. Single lens objective. Spirit level fixed to the tube. Vertical scale Dia105 brass 0-90-0-90° in 1° divisions. Vernier to 0.1°. Horizontal dial Dia130, 0-360° in 1° divisions, vernier to 0.1°. Tribrach with adjustable level screws. Set screw for fixing in azimuth position. Overall H290.

1849 (AALBKATE). Steam engine. Model.

Signed: GB 1638 (pressed into the base)

c1910 (Weitzmann catalogue).

Vertical type. Spirit heater below. Vertical cylindrical boiler Dia80 H140 with axial opening from heater to chimney. Sheet iron steam cylinder Dia30 L45. Flywheel Dia100. Level glass, safety valve, whistle, stop cock for steam, centrifugal regulator (dummy), feed water pump. Probably sold by Weitzmann's Etablissement, Hillerød.

1850 (AALBKATE). Electrostatic generator. Friction.

Not signed.

Mid 19th century (g).

Base, open wooden frame 830x370. Four glass pillars support axle for glass plate Dia465. Black wooden fittings at the axle. Two sheet iron conductors Dia90 H180 on glass pillars. One has wooden frame to support leather cushion and oiled linen (missing). The other has comb for prime conductor. Glass crank with wooden handle. Overall H620. Probably made locally.

1851 (AALBKATE). Bourdon tube.

Not signed.

Late 19th century (g).

Demonstration pressure (vacuum) gauge. Cast iron base Dia85. Fitting, stop cock and Bourdon tube probably white metal. Scale 1-0-1 (arbitrary). Invented by Eugène Bourdon (1804-84).

1852 (AALBKATE). Steam cylinder section model.

Not signed.

c1900 (g).

Brass cylinder Dia45 with piston. Slide valve. Cast iron pillar H260 supporting axle for crank and flywheel with small handle for cranking. Wooden base 210-175. Overall H390.

1853 (AALBKATE). Polariscope.

Nörrenberg's.

Signed: Cornelius Knudsen / Kjöbenhavn

c1900 (g).

Wooden base 200x200x110. On this is fitted a brass ring Dia100 with mirror Dia50. In the brass ring are two vertical white metal rods Dia8 H400, supporting a glass plate 150x65 in sliding fitting on one vertical rod and with silvered scale (almost black) indicating the variable tilt of the glass. Further up the rods is a brass ring at adjustable height to support polarizing specimen. At the top another similar ring, fixed, for polarizing specimen. Accessories: mirror, polarizing glass etc., drawer in the base.

1854 (AALBKATE). Oscilloscope.

Not signed.

c1950 (g).

Black painted wooden cabinet 110x320x255. Scope window Dia65. Twelve terminals, three adjustments. Specifications not known. Valve 5Y3, variable resistance 0.5 MΩ; components rated 2000 V AC, condenser 0.1 mF signed Janko, self made fixed resistors.

An interesting example of an early, self made school oscilloscope.

1855 (AALBKATE). Thermopile.

Signed: S.H. 41. (probably made locally in 1941?)

1941 (g).

Material not known, probably antimony-bismuth. Plate 100x100, probably asbestos, with 380 thermocouples in series. Heating one side of the plate, and cooling the other will create a potential between the terminals. Wooden pillar on iron tripod. Overall H340.

1856 (AALBUNIV). Rule. Drawing scale with transversals.

Signed: O.Sundby

c1890 (g).

Brass 167x29x3,5. Only engraved on one side, 190 units on a total length of 149 mm.

1857 (AALBUNIV). Rule. Drawing scale with transversals.

Not signed.

c1800 (g).

Brass 192x33x1. Engraved with face and foliate ornamentation. Scales on front side: 100 units on a length of 156 mm, marked "K", and 100 units on a length of 78 mm, marked "F". On the reverse eight scales without transversals, marked A,B,C,D,E,G,H,J. All scales L171, graduated A: 67 units; B: 50 units; C: 38 units; D: 29 units; E: ?; G: 16 units; H: 13 units; J: 11 units.

1858 (AALBUNIV). Rule. Drawing scale with transversals.

Signed: DENNERT & PAPE / ALTONA
Mid to late 19th century (g).

German silver. 251x45x2.5. Scales, 1:500, 1:1000, 1:2000, 1:4000

1859 (AALBUNIV). Rule. Drawing scale with transversals.

Signed: FENNEL-KASSEL / Cornelius Knudsen

Mid to late 19th century (g).

German silver. 249x45x2. Scales, 1:500, 1:1000, 1:2000, 1:4000.

1860 (AALBUNIV LBH 65). Rule.

Drawing scale with transversals.

Signed: SMITH / 1889

1889.

Brass 205x46x2.5. Only engraved on one side. Scale 1:5.

1861 (AALBUNIV).

Drawing instruments. Set.

Not signed (unless Meyer is maker?).

Mid 19th century (g).

Brass and steel. Wooden case 170x95x30, covered with ornamented leather. Red velvet lining. Eight instruments (complete set): pens, dividers, compasses. Signed C.Th.Barfoed (chemist 1815-89) on skin label (owner). Under the label is another name: C.V.Meyer (or Beyer?) in gold-print.

1862 (AALBUNIV LBH No 3).

Mirrors, angled.

Not signed.

Mid 19th century (g).

Brass housing, triangular with angles 65°, 65° and 50°, H40. Side of triangle L~55. In the house are mounted two mirrors to half the height of the house. Top half of the house is open. Brass handle L40. For surveying. Probably optical square.

1863 (AALBUNIV) Compass.

Azimuth.

Signed: J.J.Weilbach Kiöbenhavn

Mid to late 19th century (g).

Dry. Turned wood Dia155 with turned socket for staff mounting. Compass house Dia90. Compass card black/-

white, 32 points. Star indicates North, small ornament at East. Graduated 0-360°, with 1° divisions. Vernier at North with reading to 0.1°. Sights with seven pinholes in vertical line and wire. Cover missing.

1864 (AALBUNIV LBH 4)

Planimeter. Coradi's compensation type.

Signed: G. CORADI ZÜRICH No 6886 c1900 (g).

L230. Black case 250x90x30 with mauve velvet lining.

1865 (AALBUNIV LBH 5)

Planimeter. As No 1864.

Signed: G. CORADI ZÜRICH No 4555 c1900 (g).

1866 (AALBUNIV LBH 11)

Planimeter. Amsler's polar type.

Signed: J. Amsler No 72014

Late 19th century (g).

Fixed scale. Brass and steel. L330 opened. Case 220x50x40, black fitted, velvet lining.

1867 (AALBUNIV LBH 9)

Planimeter. Polar type.

Signed: J. Amsler / No 7134

Late 19th century (g).

Base bar L250. Marked on the bar: 10 sq m 1:1000, 2 sq m 1:500, 1 sq m 1:400, 5 sq m 1:1000 0.4 sq m 1:200, 0.5 sq m 1:250.

Black case 310x55x40. Blue velvet lining.

1868 (AALBUNIV protocol p 110).

Sextant.

Signed: Troughton & Simms London
Trade label: Kgl. Hof-Instrm / Corneli-

us Knudsen Etb / Nautisk Afdeling / København.

One objective signed: H.E. HOLST / ØSTERGADE 24 / KJØBENHAVN.

c1880 (g).

Brass. Y-shaped vertical strut and straight horizontal strut. Limb with silvered scale Rad130 divided -5 to 155° in 20 min divisions. Vernier to 20 sec. Magnifier. Brass index arm with clamp and tangent screw. Only forward sighting. Three shades for horizon mirror (two red, one green), four shades for index mirror (square frames) three red, one green. Thread for sighting telescope. Four telescopes Dia20 L70, L130, L170. One with larger objective Dia25 L65. Shaped wooden case.

1869 (AALBUNIV LBH 2).

Planimeter. Bar type.

Signed: CORN. KNUDSEN / KØBENHAVN / PATENT

c1900 (g).

Nickel plated. Dia8.5 L325 H70. Invented by H. Prytz 1886. Wooden box 360x85x20, sliding lid.

Ref: Nyholm, p 181.

1870 (AALBUNIV protocol p 320 no 2). Planimeter. Polar.

Signed: A. BØGH / Instrumentmager c1900 (g).

Brass and German silver. "Professor Jul. Petersen's Konstruktion". (J.P. 1839-1910). The area is measured by the displacement of a pair of wheels on common axle, L255. Base bar L150 (adjustable). Case 300x80x50. Black case with mauve velvet lining.

1871 (AALBUNIV). Level.

Not signed.

1860 (g).

Mercury in communicating vessels. Mahogany case, 515x47x50, containing U-tube for mercury. Wooden trays 25x25, one at each end, have mercury heads on which are floating wooden blocks with sights with horizontal wires. Brass ball and socket mounting, circular brass plate with four level screw feet on hexagonal brass base. Spout for emptying mercury. Old glass vial for mercury. The local protocol p 211 no 1 describes the instrument, and states Julius Nissen as maker in 1860. No 3 on same page states: same instrument, made by "P.A.Sønderup's Etabl, St. Kjøbmagergade, Kbh", no year stated.

1872 (AALBUNIV LBH 128).

Theodolite, transit.

Signed in base plate: F. A. Thiele / Th. Læssøe Müller / København / No 225 c1900 (g).

Brass. Telescope Dia30 L210. Eyepiece Dia18, rack and pinion focus. Vertical circle Dia110, scale with two verniers diametrically opposite. Scale has 0.5° divisions, vernier to 1 min. Spirit level. Horizontal scale concealed except one window. Reading by two telescopes. Scale not legible. Tribrach with adjustable screw level feet.

1873 (AALBUNIV LBH 71). Measure. Length.

Signed: E. JÜNGER KIÖBENHAVN c1860 (g).

"Kontrolmaalestok". Brass 971x47x4. Engraved: III, II, I spaced 314 mm, which equals 1 Danish foot. Each unit is divided in decimals, and these again in

decimals. The first unit to the left is again divided in 10. Engraved mark: "13° R". Spruce box 1030x80x32.

1874 (AALBUNIV protokol p 228 no 2). Standard metre.

Signed: Ein Meter bei 18°C / Otto Fennel Söhne, Cassel No 6253 / 1 K.N.E.K. 1905.

1905 (acquired).

Cross section 15x15 L1050. Divided in centimetres, numerals on every 5. At 0 and 100 are inlaid silver plates with fine graduation. Another flat is divided in feet, with decimal subdivisions. Inlaid mercury thermometer 0-40°. Fitted box 1125x45x40, domed lid.

1875 (AALBUNIV). Standard metre.

Set of two.

Signed, trade label in the lid: "CORNELIUS KNUDSEN".

1892 (certification).

Cross section 9x9. The ends are wedge shaped. Blackened surface, the middle is ground smoothly and inscribed; "1 Meter bei 18°C No 279 Otto Fennel in Cassel." The other has number 280. Fitted spruce box 1070x52x35 with domed lid. Label on the lid: "Kaiserl Normal-Aichungs Kommission, Berlin angiver d 21/4 1892: Stab 279 0 F = 1m + 0.01 (t-18)mm. Stab 280 0 F = 1m + 0.01mm + 0.011(t-18)mm worin t die jeweiligen Temperatur in Graden des hunderttheiligen Thermometers bezeichnet".

1876 (AALBUNIV LBH 1 and 4).

Compass. Azimuth.

Made by Jünger 1859. (stated in protocol).

1859

"Håndboussole". Brass Dia100 H20. Glass cover. Silvered scale 0-180-0° in 1°

divisions. Flat needle, arrestable. Folding slit and wire sights H70. Pasteboard box Dia115 H40.

1877 (AALBUNIV LBH 10).

Compass. Diviation.

Made by Jünger (stated in protocol).

c1860 (g).

"Orienteringsboussole". Mahogany case 175x55x26 with sliding lid and brass bottom. Flat Compass needle L140. Ivory scale, which has only one central mark.

1878 (AALBUNIV LBH 45).

Cross-head.

Signed: CORNELIUS KNUDSEN

c1900 (g).

Brass. Octagonal 50 mm across H55. Four sights at 45°, two with slit and wire, two with slits only. Handle is missing. Wooden box 85x69x65, brass bound.

1879 (AALBUNIV). Wedge gauge.

Signed: TH. LÆSSØE MÜLLER / KØBENHAVN / No 45

c1900 (g).

Brass with silvered scale, L147 with 0.5 mm divisions up to 15 mm. Overall L190. The large end is rounded and shaped as a handle. Wooden box, fitted 230x40x20.

Ref: Nyholm, p 49f describes that this is to be used with the standard metres (No 1875).

1880 (AALBUNIV). Cross-head.

Signed: H.E.HOLST / KGL HOF INSTRUMENTMAGER / ØSTERGADE 24 KJØBENHAVN

c1880 (g).

Adjustable. Brass. Cylinder Dia90 H103. Lower part with scale 0-360° in 1°

divisions, vernier to 1 min, sights, thumb screw for pinion. Top part with two sights at right angles, rotatable by means of the pinion. Brass handle L65 with hollow for staff mounting.

1881 (AALBUNIV). Circle. Surveyors.

Not signed.

c1800 (g).

Examination by Olov Amelin, Stockholm places this instrument as a product by Johannes Ahl.

Brass. Scale Dia500, 0-90-0-90° in 20 min divisions. Two verniers to 1 min, diametrically opposite. Telescope Dia22 L550 with fixed focus, eyepiece with sun shade, fixed objective, push fit dust cover with sliding cover for the opening. Above the telescope are sights with two pinholes and wire. Clamp and tangential screw. The fixed telescope is similar, except no sun shade. The ring is mounted eccentrically on a brass column Dia50-60 H150, and is held in position by two screws fitting into notches, allowing the instrument to be mounted in either vertical or horizontal position. Ball and socket joint with two circular brass plates Dia170 with six level adjusting screws.

1882 (AALBUNIV protocol p 211 no 2). Level.

Not signed, but the protocol states:

"Reiss, Liebenswerda. Purchased ca 1910 for 26 DCr."

c1910 (g).

U-tube for water. Soldered sheet iron tube Dia24 L1150, to be held horizontal. At each end is a vertical glass vessel Dia30 H125. Brass ball and socket joint for staff mounting H125. Protecting brass covers for the glasses.

1883 (AALBUNIV). Bearing dial.

Not signed.

c1900 (g).

Brass Dia195. Scale 0-90-0-90°. Alidade H160 with slit and wire sights. Also wire suspended between fore- and near-sight. Clamping screw at centre. Gimbal mounting with lead weight.

1884 (AALBUNIV). Level.

Signed: "PATENT A". Probably home made (?).

Primitive. Wooden tube L870, cross section 60x43, made of two joined U-cross section bars. At one end a brass plate with horizontal slit, at the other end a brass plate with Dia25 hole, corresponding to the opening of the tube. In this hole is a horizontal sighting wire. Copper plate fitting for staff mounting, formed as a cradle for level adjustment, bent at one end forming a leaf spring, and with adjusting screw at the other. Spirit level on top of the instrument.

1885 (AALBUNIV LBH 89). Alidade.

Not signed.

c1900 (bought second hand 1911).

Brass. Telescope Dia23 L260. Eyepiece Dia20, push fit focus. Objective Dia13. Push fit dust cover. Eccentrically mounted pillar on the rule L535 W50, one chamfered edge.

1886 (AALBUNIV). Measuring tape.

Signed on one side: CHESTERMAN'S PATENT / SHEFFIELD / J.C.

Signed on the other side: CHESTERMAN'S THIRD PATENT / SHEFFIELD / 25L

c1900 (g).

Steel in leather case. Length 20 alen

(ell), W9. Each alen is divided in decimals. 1 Danish ell = 628 mm. The scale marked "Danish Decimal Ell". The leather case Dia90 H25. Brass reel with folding crank.

1887 (AALBUNIV).

Drawing instruments.

Signed: "N" (in a ring)

Mid 19th century (g).

Brass compass with interchangeable steel points, pencil and ink pen. Rule with transversals 165x30x1.5. Scale 1:800 m and 1:4000 m. Wooden box 185x50x20, fitted. One item missing, probably handle for ruling pen.

1888 (AALBUNIV protocol p 340 no 1). Drawing instruments.

Signed, rectangular small stamp:

SMITH, 1894.

1894.

Brass divider L155 and smaller divider L115. Steel points. Rule with transversals 163x28x2, only engraved on one side with two scales. Black case, leather cover with ornamented edges, fitted and lined with blue velvet.

The local protocol states: "two compasses, rule, beam compass, case. Prof Schmidts (sic) Etabl 1875/76. Rule from 1894. Beam compass and rule in ells".

1889 (AALBUNIV Protocol p 340 no 2). Drawing instruments.

Signed: Prof. SMITHS Etabl.

Early to mid 19th century (g).

Brass and steel. Divider L118, ruling pen L140, pump compass with pen L100, beam compass L156. Box 215x109x25, black skin cover, gold print: "Landbohøjskolen", red velvet lining. Large divider missing.

1890 (AALBUNIV). Measure with transversal.

Signed: O.SUNDBY

c1890 (g).

Brass 246x30x2.5. Two scales, one on each side.

1891 (AALBUNIV). Beam compass.

Signed: P.F.Adrian / St.Kjøbmagergade 41 / København

c1910 (g).

Fixed length between points 157 mm. Total L162. Points L18. Wooden case.

1892 (AALBUNIV). Globe. Celestial.

Signed: GLOBUM COELESTEM / Pro
une dio seculo xix / se cundum / map-
pam coelestem G.SCHWINKII / con-
struxit & delineavit / N.ANDERSEN /
praefectus decurionum / ordinis
architectorum militarium / regis dani-
ae / HAFNIAE MDCCCLI / Samptus
Fecit C.A.Reitzel / Lith A.Bull.
c1851

Dia240. 24 gores with polar caps at 75° latitude. Metal sphere. Brass meridian. Hour ring at North pole. Brass horizon. Adjustable for latitude. Black wooden pillar and base. Overall H450.

1893 (MARSNAVI). Station pointer.

Signed: CORN. KNUDSEN KJØBEN-
HAVN

c1910 (g).

Brass. Circle Dia65. Scale graduated 0-180-0° in 1° divisions. One central fixed arm and two adjustable arms L260 W9. Chamfered edges.

1894 (MARSNAVI). Divider.

Signed: MADE IN ENGLAND

c1900 (g).

Brass with steel points. L200

1895 (MARSNAVI). Shadow pin, gnomon.

Signed: No 50087 / TOKYO KEIKI SEI-
ZO SHOKO LTD / TOKYO JAPAN
DATE 1955.

1955

Black brass base Dia31 with central hole Dial for inserting metal pins Dia1. Mahogany box 200x50x30 with lid sliding in dove-tails. Fitted for the base and for three pins of varying lengths, L100 and L140 are there but one is missing, presumable L120.

1896 (MARSNAVI). Mirrors, angled.

Signed: CORNELIUS KNUDSEN /
KJØBENHAVN
c1900 (g).

Optical square. Black brass house 45x45x45 on turned black hardwood handle L80. Two mirrors set at 90° showing objects in opposite directions of the viewer. Overall L130. Black paper covered case with red velvet lining.

1897 (MARSNAVI). Octant.

Not signed by maker.

Mid 19th century (g).

Ebony frame. One vertical strut and bowed horizontal strut. Brass fittings. Limb Rad340. Scale -2 to 100° in 20 min divisions. Vernier to 1 min. Tangential screw and clamp. Brass index arm L370. Pinhole sight. Three shades for index mirror (two red, one green). Reverse sighting pinhole. Rectangular mounting hole for shades by reverse sighting. Adjustment for horizon mirror. Nameplate, pencil and note plate missing. Index arm signed by owner: H.N.Olsen Marstall 1864

1898 (MARSNAVI). Sounder.
"Mariotte Depth Sounder".

Not signed.

c1920 (g).

Brass. tube Dia12 L630 containing glass tube Dia4.4 L610. Measures depth by compression of confined air at increased depth.

1899 (MARSNAVI). Octant.

Not signed.

Mid 19th century (g).

Ebony frame. One vertical strut and bowed horizontal strut. Brass fittings. Limb Rad270. Ivory scale -4 to 101° in 20 min divisions, vernier to 1 min. Brass index arm, T-cross section; tangential screw and clamp. Brass bracket for horizon mirror and three shades (two red, one green) in square brass frames. Adjustable horizon mirror. Pinhole sight with two holes and sliding cover. Ivory pencil holder. Nameplate and noteplate missing.

1900 (MARSNAVI). Quintant.

Signed: Made by Cornelius Knudsen
Denmark

1926.

Brass, oxidized brass. Lattice frame, circles and radii. Telescope missing. Brass limb, Rad180. Silvered scale -5 to 175° in 30 min divisions, vernier to 1 min. Magnifier, clamp, tangential screw. Brass index arm L210. No shades. Certificate of Examination of No 180, 7" inch Quintant dated 20th March 1926.

1901 (MARSNAVI). Chronometer.

Marine.

Signed: Ed. Otte Altona /1003

c1880 (g).

Mahogany box 155x160x155 with lock.

Brass gimbal with arresting clamp. Clock case Dia103 H63. White metal dial Dia75. Roman numerals. Second's dial. Winding dial marked Anfg, Abgl, 0-8-16-24-32-40-48-52.

Repair label in the lid: "URBAN JÜRGENSEN OG SÖNNERS EFTF / UHR ETABLISSEMENT / GOTHERSGADE 8.

1902 (MARSNAVI). Dip circle / compass.

Not signed.

Mid to late 19th century (g).

Tribrach with three level screw feet. Azimuth brass dial Dia80 scale 0-90-0-90° with 1° divisions. Rotatable brass pillar with index. Bracket for plumb bob. Brass stirrup with dial Dia110 rotatable for horizontal or vertical position. Magnetic needle L90. Silvered scale (very black) 0-90-0-90°. Overall H285

1903 (MARSNAVI). Deflector,
Clausen's universal.

Made by: Cornelius Knudsen

c1920 (g).

Brass ring Dia130 in which another brass ring Dia115 is sliding. Outer ring graduated 0-45-90-45-0-45-90-45°, inner ring graduated twice 0-135° separated 90°. Diametrically a left-right screw moves two vertical bar magnets in opposite directions. A mm-scale indicates this movement. The instrument determines the deviation without bearings. It works on the principle, that "there is no error in the compass, when the direction force of the needles is the same with the ship's head on any four directions at right angles to each other". (from catalogue c1920).

1904 (MARSNAVI). Compass.
Marine.

Signed in the bowl: IVER C. WEIL-
BACH & CO / KJØBENHAVN

Signed at the rim: 12558

Signed on the rose: IVER C. WEIL-
BACH & CO / K.PRAHL & C.SØLVER.
c1930 (g).

Dry. Lord Kelvin type. Brass bowl
Dia285. Lead weighted. Compass card
with eight magnets and light paper
rose. 128 points, 0-90-0-90° in 1° units.
Fleur de lys at North.

1905 (MARSNAVI). Vernier model.

Signed: OTTO DØRGE / KJØBEN-
HAVN

c1900 (g).

Mahogany. White painted face. 410x
66x17. Vernier L250 sliding in groo-
ve.

1906 (MARSNAVI). Artificial horizon.
Not signed.

c1900 (g).

Mahogany tray 285x225x24, D12. Flat
copper tray Dial35 for mercury, faste-
ned on mahogany base. Roof shaped
mahogany cover with two glass panels
140x95, brass bottom with opening
Dial40 to fit over the mercury. Two
small vent holes at the top of the
gable.

1907 (MARSNAVI).

Steering machine.

Signed: Glidermekanisme / til en /
Styremaskine / Skematisk Fremstilling.
V.Andersen / Kjøbenhavn

c1900 (g).

Educational model. Show case 370x-
130x420. Black lacquered wood with
glass front door 270x320. The model is

made of steel gears and spindels,
resembling original, while steam
engine, etc is made of wood and card-
board, nicely decorated to look real.
The model may be operated by keys
from the outside.

1908 (MARSNAVI). Bearing dial.

Not signed (probably Cornelius Knud-
sen, Copenhagen)

c1900 (g).

Brass ring Dia250 with scale 0-90-0-90°
in 1° divisions and N, Ø, S, V. Folding slit
and wire sights H105 and H120. Spirit
level. Centre pin to fit hole in the
compass glass.

1909 (MARSNAVI). Sounder.

"C.Clausen's patent No 219".

Signed: Cornelius Knudsen Køben-
havn

c1930 (g).

Pressure gauge type. Glass tubes in
cylindrical brass house Dia45 L670,
heavy brass rings at the ends for faste-
ning ropes. Two openings to the glasses
with brass scales (a) 5-158 FVN and (b)
6-250 FVN, divisions becoming smaller
with growing numbers. This is kept in a
heavy frame or cage of four Dia12 iron
rods. Lead weight at the bottom Dia80
L225 with hollow underneath for sam-
pling material from the sea floor. Over-
all L1100.

1910 (MARSNAVI). Binnacle head.

Signed: CORN. KNUDSEN /
KJØBENHAVN

c1930 (g).

Brass. Plate formed with oval openings
for viewing, with brass shutters, two
openings for lamps and one for vent.
Overall dimension: 450x400x240.

1911 (MARSSØF). Parallel rule.
Plain.
Not signed.
c1900 (g).
Ebonite with brass fittings. 378x67x5.
Maximum distance between rules is 45 mm.

1912 (MARSSØFA). Hydrometer.
Sike's.
c1920 (g).
For specific gravity of sea water. Gilded brass sphere Dia40. Stem cross section 4.5x4.5. Overall L235. Four weights screw on the lower end of the stem. Four sides of the upper stem are graduated, (a) 11 to 14; (b) 14 to 16; (c) 0 to 7 and (d) 7 to 11, all with 1/4 divisions. The lower stem is marked 860 (or 86°). The four weights are numbered 1 to 4 and marked 1860 (or 186°).
Thermometer: red spirit in glass, broken. Pewter plate 245x30 with scale -5 to 43°R, and -1 to +2 1/4 in 1/4 divisions. This scale is marked "Sp", and a "T" at the zero point corresponding to 9°R. All in an oval brass container, 63x48x240.

1913 (MARSSØFA). Octant.
Early to mid 19th century (g).
Ebony frame. One vertical strut and bowed horizontal strut. Limb Rad350. Ivory scale -3 to 100° in 20 min divisions. Vernier scale is missing. Brass index arm with clamp, but without tangential screw. Brass bracket for mirror and three shades in square brass frames (two red, one green). Pinhole sight. Ivory nameplate: "Fritz Methling" (owner). Note plate and pencil are missing. Index mirror missing, engraved on mirror plate: "WE".

1914 (MARSSØFA 0018). Compass card.
Signed: H.I. Mylasz / M.L.Fecit...1775 1775.
Paper. Black print. 32-point rose, 0-90-0-90° in 1° divisions. Fleur de lys at North and foliate at east.

1915 (MARSSØFA 0019). Compass card.
Signed: 1729 / Lohse 1729.
Paper on cardboard. Dial125. Two magnetized steel wires lozenge form glued around the centre. Black printed compass rose with eight points and 32 divisions. Text seems to be Icelandic (e.g. "Sudeir").

1916 (MARSSØFA 0080). Compass.
Not signed.
Mid 18th century (g).
Dry. Black wooden case Dial10. Steel pivot H26. Glass cover. Wooden lid. Overall H60. Compass card paper glued on mica with glued on magnet. Rose 32 points, Dutch notation. (e.g. Oost, Suyden). Dia90.

1917 (MARSSØFA 0135). Map of important stars.
Not signed (Danish).
c1920 (g).
Wooden base 330x330. On this is a paper scale Dia330 with hours of the day (1 to 12 / 1 to 12). Written "Morgen", "Middag", "Aften", "Midnat". Upon this is a rotatable metal disc Dia305 with the star map under glass rotated by means of a thumb nut; index for time of the day. Upon this again is a wooden ring, which can be displaced

on the map to mark the visible part of the sky at the particular time of the year.

1918 (MARSSØFA 0024). Box Scale.

Signed: A. ULRICH DANZIG

c1900 (g).

Boxwood. 610x47x5. Scales for rhumbs, chords, sines, tangens, s.tang. Marked "NAVIGATIONS SCALE IMPROVED BY B. DONN". On the other side are nine different geometric scales.

1919 (MARSSØFA 0038). Traverse board.

Not signed.

c1920 (g)

Wood. Overall L420. Circle Dia250, carved as 32-point compass card. From the barkentine "Chieftain".

1920 (MARSSØFA). Octant.

Signed on ivory name plate: SPENCER BROWNING & Co LONDON

Signed on the scale between 50 and 55: SBR

Mid 19th century.

Ebony frame. Limb Rad270. Ivory scale -2 to +104° in 20 min divisions. Vernier to 1 min. Brass index arm, T-cross section, L300. Clamp and tangential screw. Brass bracket with provisions for horizon mirror and shades. Parts are missing. Pinhole sight.

1921 (MARSSØFA 0021).

Altitude circle.

Not signed (probably locally made).

c1920 (g).

Wooden base (spruce). 400x120x20. On this is a vertical baseboard semi-circle, Dia255. Scale 0-180° in 1° divi-

ons, hand made. Sheet iron alidade with wire for casting sun-shadow on the scale.

1922 (MARSSØFA).

Inclination needle; vertical force magnetometer.

Signed: EINAR WEILBACH & CO / NYTOLDBODGADE 11 / KØBENHAVN K

c1900 (g).

Brass house 125x35x50 with glass panel on front side, and glass panel in sliding lid. Inside are two stands with V-notches for inclination needle. Indication at each end of equilibrium point (horizontal) for the magnetic balance. Spirit level. The needle is a Dia4 steel rod, pointed at both ends. Special brass box, 123x15x10, for keeping the needle. All to be stored in an oak box, 147x93x53, fitted, green felt lining, sliding lid.

1923 (MARSSØFA 06863).

Parallel rule.

Not signed.

c1900 (g).

380x57x5. Ebony with brass fittings. Two chamfered edges, maximum distance 120 mm.

1924 (MARSSØFA 6862). Protractor.

Not signed.

c1900 (g).

Celluloid. Scale 0-90-0° in 1° divisions. Compass directions 0-8-0 in 1/4 divisions, with pencil holes for each division.

1925 (MARSSØFA). Telescope.

Refracting.

Signed: J.R. Cameron / Liverpool

Late 19th century (g).

One draw. Brass with black skin cover.

Tube Dia57 L485. Eyepiece Dia41, with sliding dustcover. Huyghens ocular. Push focus. Erecting lens. Objective Dia28. Push fit sunshade, with sliding dustcover.

1926 (MARSSØFA 0325). Telescope. Refracting.
Not signed.
Mid 19th century (g).
Three-draw. Brass tube black leather cover. Tube Dia30 L125. Extended L397. Eyepiece Dia17.5 L35, Huyghen's ocular. Objective Dia22, defective. Dust cover missing.

1927 (MARSSØFA 100). Tobacco box, Dutch seaman's.
Not signed.
Second half 18th century (g).
Brass. 170x47x33. On the lid is engraved "Voor Christ 45", a perpetual calendar (invention of Samuel Morland in 1650), "1482". On the bottom is engraved a table for determining the speed of the ship. Dutch inscriptions on the sides.
Ref A.Turner, p 196.

1928 (MARSSØFA 0072). Hydrometer. Salinometer, Sike's.
Signed: THOS. L. AINSLEY / CAR-DIFF & BARRYDOCK
Late 19th century (g).
Brass. Sphere Dia44. Upper stem 100x8x2.5, graduated 00 to 25 in equidistant divisions. Marked "TEMP 60". On the reverse is stamped "MARINE HYDROMETER". Attached paper table is signed: THOS. L. AINSLEY'S / HYDROMETER TABLE / (density table) / Nautical Instrument Maker /

Chart and Bookseller / 5, JAMES ST., DOCKS, CARDIFF / AND AT BARRY DOCK.

1929 (MARSSØFA 0008).
Reel for log line.
Not signed.
c1900 (g).
Oak. Dia260. Four oak struts Dia20 L405 between guides. Iron axle with two handles. Total length 750.

1930 (MARSSØFA 0030).
Azimuth mirror.
Signed: C. CLAUSEN'S PATENT No27 CORNELIUS KNUDSEN KBHVN
c1920 (g).
For compass verification. C. Clausen's Patent. Brass. Rectangular frame 153x39 with central point for compass glass centre hole and four supporting feet. Spirit level. At each end double-folding slit and wire sights. At the centre is an ivory plate Dia20 with sight line, and a mirror on the reverse. Two circular sun filters.

1931 (MARSSØFA 0031).
Bearing sights, alidade. Brass frame 175x50. Signed on the instrument: Iver C. Weilbach & Co / København
Signed on the box: IVER C. WEILBACH & CO / SØLVER OG SVARRER / Instrumentmager / Amaliegade 30 / KØBENHAVN
c1920 (g).
Central hole for pin matching central hole in compass glass (pin missing). Folding sights H90, slit and wire. Softwood box 227x87x62 with sliding lid.

1932 (MARSSØFA 0039). Octant.
Not signed.
c1800 (g).

Mahogany frame. One vertical strut and bowed horizontal strut. Limb Rad400. Boxwood scale 0-90° in 20 min divisions. Transversal scale to 1/10 of 20 min. The transversal scale is marked at both ends with four stars in quadrangle. Mahogany index arm with inlay ivory edge for reading transversals. Brass clamp. Mahogany bracket for horizon mirror, reverse sighting mirror and two red filters in square brass frames. Double pinhole sight with sliding shutter for forward, single hole for reverse sighting. Blank ivory nameplate.

1933 (MARSSØFA).

Azimuth reflector.

Signed: THE / VOLTA AZIMUTH REFLECTOR / PATENT No 6489 c1900 (g).

Brass base 155x67 with centering knob and four feet for placing on compass glass. Arced nearsight with slit. Wire suspended from the top of the arc. Central to the arc is a circular mirror with white (ivory?) plate on the reverse. Two red filters. Mahogany box 194x85x147, fitted. "Instructions for obtaining Bearings of the Sun, Stars, Land Objects &c."

1934 (MARSSØFA). Compass.

Marine.

Not signed.

Mid 19th century (g).

English notation. Dry. Brass bowl. Dial180. Gimbals in oak case 250x250x150. 16-point compass card, 0-90-0-90° in 20 min divisions. Blue with black print. Fleur de lys at North.

1935 (MARSSØFA 0065). Octant.

Not signed.

c1800 (g).

Mahogany frame. One vertical strut and bowed horizontal strut. Limb Rad380. Boxwood scale divided 0-90° in 20 min divisions. Transversals to 1/10 of 2 min i e 12 sec. The scale is marked with three stars at each end. Mahogany bracket, brass fittings, forward and reverse mirrors, two red filters, removable for forward and reverse sighting. Double pinhole sight with sliding shutter. Parts missing.

1936 (MARSSØFA). Depth sounder.

Signed: LILLEY'S, PATENT IMPROVED, SIR Wm THOMSON, PATENT, IN FATHOM

c1900 (g).

Marked: "Sigurdson's Patent 1606". Hollow brass cylinder Dia33 L500 with rope attached. Another brass cylinder for insertion in this Dia28 L486 with glass tube graduated 6 to 150, units are getting smaller with increasing number. On the rear of this cylinder are four scales with an adjustable index. The scales are (a) D, 780 to 740, F; (b) E, 780 to 740, F; (c) T, 10 to 0; (d) M, 780 to 740, F. Boxwood cylinder Dia38 L330 with cut-outs leaving the cylinder in five sections, all with scale 5 to 100 (smaller units at higher numbers). (a) Up to 29 1/2; (b) 29 3/4 (c) 30; (d) 30 1/2; (e) 31. Fitted softwood case 610x120x75.

1937 (MARSSØFA 0040). Compass.

Marine.

Signed: C.F. Petersen. Compassmacher. St Pauli

Mid 19th century (g).

Dry. Turned wooden bowl. Dial160. Red painted rim. White inside. Brass gimbals in wooden case, 215x215x140, sli-

ding lid. 32-point compass card. Black print on white. Fleur de lys at North, foliate at East.

1938 (MARSSØFA 0104). Compass.
Dry.

Not signed.

Mid 19th century (g).

Turned wooden bowl Dial30 H85. White inside with lubber's line. Glass cover. Turned softwood lid, push fit. 32-point compass card. Fleur de lys at North, ornamented East. Black print on white.

1939 (MARSSØFA 0105). Compass.
Dry.

Signed: L. KIRKEBY / KJØBENHAVN
Mid 19th century (g).

Turned wooden bowl, Dial45 H95, white inside with lubber's line. Turned wooden lid, push fit. 64-point compass card, black print on white. Fleur de lys at North. Defective.

1940 (MARSSØFA 0043, 0107). Two
Logs with wooden (oak) lock for log
line. Not signed.

c1900 (g).

Sector shaped log Rad160, chord L190,
10 mm thick.

1941 (MARSSØFA 0124).

Morse signal lamp.

Not signed.

c1900 (g).

Oak case 22x155x90 with brass bound corners. Brass lens base Dia90, with lens in brass fitting to screw on. Plano-convex lens Dia60. Side of case slides open for large battery, 175x125x55. Morse key on the side. Leather carrying strap.

1942 (MARSSØFA 0013). Octant.

Not signed.

c1800 (g).

Mahogany frame. One vertical strut and bowed horizontal strut. Limb Rad400. Boxwood scale Rad390, 0 to 90° in 20 min divisions. Transversals to 2 min. Mahogany bracket for horizon and reverse sight mirrors, two red filters in square frames, slots for direct and reverse sighting, double pinhole sight with sliding shutter for direct, single hole for reverse sighting. Brass name plate, not engraved. Mahogany index arm L415 with brass end and reading edge. Clamp. The scale has a small fleur de lys at both ends.

1943 (MARSSØFA). Chronometer.
Marine.

Signed on the dial: Hohwū Amsterdam
No 101

Signed on the case: GRAHAM AND
PARKES / 43, CANNING PLACE /
LIVERPOOL

Trade label: LAURITZ KIRKEBY / successor to / WILLUM PETERSEN / Chronometer & Instrumentmaker / to the Royal Navy / COPENHAGEN / Laxegade 26 Corner of Sqvaldergade. ESTAB 1841.

c1880 (g).

Polished mahogany case 155x155x155 opening at the middle for removing instrument and gimbals. Lock with key. Lid opens to glass panel over the instrument. Silvered dial Dia80. Roman numerals. Seconds scale Dia30 with Arab numerals. Winding dial, 12, 24, 36, 48.

1944 (MARSSØFA 0064). Octant.

Maker: The anchor marked on the scale points to one of the Troughtons.

c1800 (g).

Ebony frame. One vertical strut and bowed horizontal strut. Limb Rad355. Ivory scale Rad350, -2 to 99° in 20 min divisions. Ivory vernier to 1 min. Scale marked with an anchor between 45 and 50. Brass double pinhole sight for forward and single for reverse sighting. three filters (one green and two red) in square brass frames. Mirrors for forward and reverse sighting. Blackened brass index arm, T- cross section. Nameplate, pencil and note plate gone. Clamp screw missing.

1945 (MARSSØFA). Telescope.

Refracting.

Signed: DOLLOND LONDON

c1800 (g).

Mahogany tube Dia80-63. One-draw focusing. Eyepiece Dia47, marked "Day or Night". Ocular missing. Objective Dia68. Brass sleeve L150 at objective end. Leather sleeve L350 along the middle of the tube.

1946 (MARSSØFA 0049). Barometer.

Banjo.

Not signed.

Mid 19th century (g).

Walnut. Dial Dia200. Silvered scale 28 to 31 divided in decimals to 1/100. 28: Stormy; 28.5: MUCH RAIN; 29: RAIN; 29.5: Change; 30: FAIR; 30.5: SET FAIR; 31: Very Dry. Domed glass. Above this is a convex mirror Dia72. Above this a thermometer H175 W40, spirit in glass. Pewter scale 22 to 110° divided in 2°. At the top is an inset picture of a ship - probably the owner's. At the bottom a spirit level under glass Dia50. Door L850 at the rear opens to mercury barometer.

1947 (MARSSØFA). Sextant.

Signed: Cornelius Knudsen Kjöbenhavn

c1900 (g).

Blackened brass frame, three circles. Silvered scale Rad150, -5 to 145° in 20 Min divisions. Vernier to 10 sec. Telescope reading. Clamp and tangential screw. Three horizon shades. Four index shades. Sighting telescope L70. Eyepiece missing. Fruitwood handle.

1948 (MARSSØFA). Octant.

Signed on the scale: SBR (Spencer Browning & Rust)

Mid 19th century (g).

Ebony frame. One vertical strut and one straight horizontal strut. Brass telescope. Two horizon, three index shades. Ivory scale -2 to 107° in 20 min divisions. Ivory vernier to 20 sec. Brass index arm, T-cross section. Clamp and tangential screw.

1949 (MARSSØFA). Octant.

Signed on ivory name plate: MATHE-SON & Co LEITH

Late 19th century (g).

Ebony frame. Two vertical struts and one straight horizontal strut. Scale Rad220, -4 to 109° in 20 min divisions. Vernier to 10 sec. Clamp and tangential screw.

1950 (MARSSØFA 0073). Octant.

Not signed.

Late 18th century (g).

Mahogany frame with Siamese ivory ornamentation. One straight horizontal strut and one vertical strut. Limb Rad600. Brass scale Rad590 W30, 0-90° and 90-0° in 1° divisions. Gear teeth on the brass scale and pinion on the index

arm operates a pointer in a circular brass dial micrometer on the index arm, Dia65 scale 0-60 to indicate minutes; pointer and pinion missing. Oxidized brass index arm. Mahogany bracket with ivory ornamentation for mirrors and filters. Forward and reverse pinhole sights and mirrors. Forward mirror gone. Two red filters movable for sight directions. Probably a 'souvenir' from Siam.

1951 (MARSSØFA 0057). Compass. Tell-tale.

Signed: Rasmus Koch / Kiöbenhavn Anno 1765
1765.

Dry. Brass bowl Dia135 H75. Gimbals, supported by two struts from the ceiling. Eight-point card. Fleur de lys at North, human figures at seven points.

1952 (MARSSØFA). Telescope. Refracting.

Not signed.

c1800 (g).

Octagonal wooden tube, 37 mm across, L300. Brass collars. Objective Dia15. Sliding shutter. One draw Dia22 push. Single lens ocular Dia15. Erecting lens.

1953 (MARSSØFA). Telescope.

Refracting.

Not signed.

Early 19th century (g)

Brass. Tube Dia48 L250. Fixed focus. Erecting lens. Objective Dia19. Ocular Dia10 with sliding shutter. "For Day Objects" engraved on tube.

1954 (ÆRØMUSEU 1227). Weight.

Mid 19th century (g).

Bell metal. Shaped as short baluster with handle. Maximum Dia72, H105.

Stamped on the handle "6 MARCK COLLN"; stamped on the body "C7" crowned in oval, for King Christian VII (1848-63).

1955 (ÆRØMUSEU 1227). Weight.

Mid 19th century (g).

As No 1954, except maximum Dia105 H170. Stamped on the handle "20 MARCK COLLN".

1956 (ÆRØMUSEU 1228).

Nest of weights.

c1853.

Bronze Dia110 H80. Hinged handle with clasp. Stamped on the lid "16 m" and crowned "C7" (for King Christian VII). Cup weights: 4 m, 2 m, 1 m, 1/2 m, 4 lo, 2 lo, 1 lo, 1/2 lo, 1/4 lo, 1/8 lo. m stands for Mark, lo for Lod. Apparently the central weight of 1/8 lo is missing.

A resolution was passed in 1839, for a weights reform in Denmark, but was not really carried through until 1853. According to this 1 Mark = 16 Lod (1 Mark = 250 grammes).

1957 (ÆRØMUSEU 1397). Balance.

Not signed.

Late 19th century (g).

Iron beam L280. Swan's neck beam ends. Gallows H90. Brass pans Dia125. Suspended in three cords from S-hooks.

1958 (ÆRØMUSEU 1392). Balance.

Chemical.

Not signed.

Late 19th century (g).

Iron beam L290. Swan's neck beam ends. Gallows with pointer H150. Brass pans Dia137 H90 supported in three cords from S-hooks.

1959 (ÆRØMUSEU 393). Balance.

Chemical.

Not signed.

Late 19th century (g).

Iron beam L300. Swan's neck beam ends. Gallows with pointer H130. Brass pans Dia195 H105, suspended in S-hooks with three cords.

1960 (ÆRØMUSEU 1395). Balance.

Chemical.

Not signed.

Late 19th century (g).

Brass beam L275. Box beam ends. Gallows and pointer H160. Horn pans Dia180 H50.

1961 (ÆRØMUSEU 1220). Weights.

1860.

Cast iron. Cylindrical with knob. Four, (a) 1 pound Danish, Dia50 H32; (b) 1/2 pound Danish, Dia40 H27; there are two of each. All are marked, cast in the iron "1860" and crowned "F" with an additional illegible number.

1962 (ÆRØMUSEU 1474). Weights.

Eight.

c1860 (g).

Brass or bell metal. Shaped as frustum of a pyramid. Very worn. (a) marked "16" and other blurred signs, e.g. a tower surrounded by heraldic signs. Underneath "3CB"; (b) marked "3 / 1", crowned "C7"; (c) marked "6 UNZEN", underneath a longish stamp with five letters "(xxx)ER", (could be RØMER?); (d) illegible except "UNZEN"; (e) marked "50"; (f) notation for 1 Unse; (g) notation for 1 Unse, a heart with the letters "WCH" and a crown in each corner; (h) marked with notation for Unse.

(Notation for "Unse" can not be typed; it looks like a symbol for lightning and is equivalent to 31.25 grams or 1/12 pund).

1963 (ÆRØMUSEU 1300). Pipette,

fluids sampler.

Not signed.

Late 19th century (g).

Soldered sheet iron. Pointed tube maximum Dia20 L330, cylindrical receptacle Dia70 L200 and tube with handle Dia20 L120, i.e. overall L650.

1964 (ÆRØMUSEU 1413). Sandglass.

Not signed.

c1800 (g).

Blown in two parts and joined at the points. Green glass, Dia145. Overall H345. Contains sand, which, however, does not run. Probably a one-hour glass.

1965 (ÆRØMUSEU). Apothecary glassware.

19th century - some probably earlier.

Collection of 18 different retorts, flasks, tubes etc in green and clear glass.

1966 (ÆRØMUSEU 1293). Distiller.

Not signed.

c1880 (g).

Copper retort Dia280 with spout L500 and average Dia55. Placed in iron boiling vessel, which again is placed in the opening of an iron fire range, built into a foundation of brick. Overall H900 L900 W560. Renovated.

1967 (ÆRØMUSEU 1219). Balance.

Chemical.

Not signed.

Mid 19th century (g).

Wooden base 550x260x100 with drawer. Wooden (ash ?) turned column Dia40 H600. Brass hook for suspension of balance. Brass beam L310, box type beam ends. Brass pans Dia125, suspended in two bent brass rods.

1968 (ÆRØMUSEU 2011). Measuring sticks, Danish "Rudestok". Two. Signed: KIØBENHAVNS RUDESTOK / J.G. SCHWARTZ & SØN
KIØBENHAVNS RUDESTOK 1858
I.C.R.
1858.

Rectangular cross section 17x13 ebony stick, L1500. Seven scales, all having decreasing units by higher numbers. Scales are (a) on one side 0-250, 0-30 marked "OXE" and 0-40 marked "BAIONNE"; (b) on second side 0-56 marked "ROM" and 0-54 marked "MADEIRA"; (c) on third side 0-65 marked "PORT & BRÆNDEVIN" and (d) on fourth side 0-63 marked "MAL-LAGA". Used for measuring volume.

1969 (ÆRØMUSEU 2554). Telescope. Refracting.
Not signed.

Mid 19th century (g).
Brass tube Dia62 L480. Leather covered. One draw focusing Dia45 L390. Huyghen's ocular L100. Eyepiece with sliding shutter. Erecting lens, section of two lenses with Dia5 aperture at the middle of the optical system. Objective Dia 40 with sliding sun shade Dia60 L115. Very good condition.

1970 (ÆRØMUSEU 516). Octant.
Signed on the scale between 45 and 50: SBR
Signed on ivory nameplate: Made by

Culmer No 126 Wapping London /
Christoph Krohn 1803.
1803.

Mahogany frame Rad340. One vertical strut and bowed horizontal strut. Ivory scale -2 to 99° in 20 min divisions, vernier to 1 min. Brass bracket for forward and reverse horizon mirrors, reverse sighting pinhole and three shades in square brass frames for index mirror, slot for shades in reverse position. Forward double pinhole sight with shutter. Brass index arm with clamp and ivory vernier. Pencil and note plate missing.

1971 (ÆRØMUSEU 515). Octant.
Signed at centre of scale: SBR
c1800 (g).

Mahogany frame Rad 350. One vertical strut and bowed horizontal strut. Ivory scale -2 to 99° deg in 20 min divisions, vernier to 1 min. Brass bracket for horizon mirror and three shades in square frames. Pinhole sight. Nameplate, pencil and note plate missing. Brass index arm, flat, with clamp.

1972 (ÆRØMUSEU 518). Octant.
Signed with 13 small rings in oval about 10 mm long, at centre of scale.
c1800 (g).

Ebony frame Rad350. Ivory scale -2 to 99° in 20 min divisions. Vernier to 1 min. Brass bracket for forward and reverse horizon mirrors, reverse pinhole sight and three shades in square brass frames, slot for shades in reverse position. Double pinhole sight for forward, with shutter. Flat brass index arm with ivory vernier and clamp.

1973 (ÆRØMUSEU 808). Octant.

Signed on scale end: MADE BY /

THOs HICKS / DUBLIN

c1795 (fl).

Mahogany frame Rad500. One vertical strut and bowed horizontal strut.

Boxwood scale,

0 to 90° in 20 min divisions, transversals to 2 min. The fifth line is extended beyond the scale ends, and ends in three points forming a triangle. Wooden bracket with forward and reverse mirrors, pinhole for reverse sighting, two shades in square brass frames for index mirror, slot for shades in reverse position. Mahogany index arm with clamping screw. Nameplate missing.

1974 (ÆRØMUSEU 807). Octant.

Signed on ivory nameplate: "E. NAIRNE LONDON.". Four stars in diamond at both ends of the name, and also at the centre of the vernier.

Late 18th century (g).

Mahogany frame Rad450. One vertical strut and bowed horizontal strut. Ivory scale -5 to 95° in 20 min divisions, vernier to 2 min. Mahogany bracket for forward and reverse mirrors, pinhole reverse sight, two shades in square frames for index mirror and slot for shades in reverse position. Double pinhole sight for forward sighting. Mahogany index arm with L100 brass reinforcement with window for scale reading, ivory vernier and clamping screw.

1975 (ÆRØMUSEU 326). Octant.

Not signed.

c1800 (g).

Ebony frame Rad400. Ivory scale -2 to 99° in 20 min divisions, vernier to 1 min. Brass bracket for forward and

reverse mirrors, pinhole sight, three shades and slot for shades in reverse position. Double pinhole for forward sighting. Flat brass index arm with ivory vernier and clamp. Nameplate, noteplate and pencil missing.

1976 (ÆRØMUSEU 517). Octant.

Not signed.

c1800 (g).

Ebony frame Rad250. One vertical strut and bowed horizontal strut. Ivory scale -4 to 108° in 20 min divisions. Vernier to 1 min. Brass bracket for three circular shades, horizon mirror, three square shades for index mirror. Pinhole sight. Brass index arm, T-cross section, with clamp. tangential screw and ivory vernier. Nameplate, noteplate and pencil missing.

1977 (ÆRØMUSEU 2807). Morse receiver and sender.

Signed on brass plaque: DIGNEY FRÈRES / Btes S.G.D.G. / No 9378

Signed on brass plaque on the lid: APPAREIL / MILITAIRE PORTATIF / DANEMARK c1900 (g).

Oak box 385x160x190, Three sides folding down revealing the instrument on a mahogany base to slide out on dove-tail guides. Spring driven clock in brass housing 170x70x95 with glass top. The printing tape passes over a soft wheel with pin for writing, pressing upwards from down under. Two coils. Two reels. Key for sending. Galvanometer in brass house with glass front; scale 90-0-90°.

1978 (ÆRØMUSEU 322). Measuring stick.

Signed, indent: F.L. 1769.
1769.

Iron. Cross section 18x3. The length is marked by inlaid iron bars. Total L570. Iron marks are placed at 18, 36, 72, 144, 187, 429 mm from zero.

1979 (ÆRØMUSEU 2567).

Measuring stick.

Not signed.

Mid to late 19th century (g).

Wood (probably ash) Dia18-10 L627. Small nails indicate lengths: at 79 mm, 1 nail; at 156 mm, 2 nails; at 313 mm, 3 nails; at 470 mm, 1 nail. Square ivory plate indicate zero. Nicely turned wooden handle.

1980 (ÆRØMUSEU 2889). Level.

Water.

Not signed (probably locally made).

c1900 (g).

Sheet iron tube Dia30 L960 with 90° bends at the ends, L70 (upwards) extended by glass vials Dia25 L75. Sighting glasses to be filled with water. Socket at the middle, fitting over wooden pole H110 to be pressed into the ground.

1981 (ÆRØMUSEU 2905). Scale.

Signed: J. Weber. (and picture of a sailing ship).

c1900 (g).

Brass. 357x91x3. Divided in four sections 10-0-10-20-30. Distance between each is 79 mm. The first section (10-0) is subdivided in 1/10's, which are further subdivided by transversals to 1/16th, by eight parallel lines marked 2,4,6,8,10,12,14. This scale has allegedly been used by a sailmaker,

1982 (ÆRØMUSEU 2385).

Barometer. Cistern.

Signed: M. Simoni / Barometer- und Thermometermacher

Late 19th century (g).

Walnut base, L950. Roof shaped pediment. Register plate H140 W85 with heading "BAROMETRUM", text in Danish. "Foranderlig" (Change) is at 28 (inch).

1983 (ÆRØMUSEU 2052). Barometer. Cistern.

Signed: CARLO AUREGGI

Late 19th century (g).

Mahogany veneer. H945 W45. Register plate 151x88 headed "MAGNUM BAROMETRUM". Two columns of text, French and German with linguistic errors. "Variable Veränderlich" is at 28 (inch). At the bottom of the scale is written "Cujus ope Tempestatis Ratio Mutatio / præcognoscitur / CARLO AUREGGI.

1984 (ÆRØMUSHA 562).

Volume measure. Two.

Not signed by maker.

c1910 (g).

(a) 1/2 L (for liter). Cylindrical cask, oak staves, two iron hoops. Outer Dia130, inner Dia100, outer H90, inner H60. Marks in the wood: "1/2 L", and "7 / 1 9 5 / 17". These last figures are difficult to read. (b) The other cask is marked 2 L and a similar symbol of numbers.

1985 (ÆRØMUSHA 564).

Volume measure. 'Skæppemål'.

Not signed by maker.

1857.

Cylindrical cask, oak staves, two iron hoops. Outer minimum Dia235 maximum Dia275. Inner Diameter at top

210, inner H110, outer H145. Mark in the wood at the side "SKP 1/4". Mark at the bottom, crowned "C5 1857". (1 Skæppe = ~ 17.4 litres, used for grain measure until the introduction of the metric system at the beginning of the 20th century).

1986 (ÆRØMUSHA 565, 568).

Volume measures. Two. 'Skæppemål'. Signed: (a) Crowned "C5 1834", three towers (for Copenhagen) and "1 SKP"; (b) as 1, except "1865".

1834, 1865.

Cylindrical cask, oak staves, two iron hoops (one is renewed). Outer Diameter at the top 350, at the bottom 320, inner H185, outer H220. Two iron handles.

1987 (ÆRØMUSHA 567). Volume measure. 'Skæppemål'.

Not signed.

c1900 (g).

Oak staves, three iron hoops, two opposite staves are longer and with holes for iron handle. Painted white inside, green outside. Marked "1 SKP".

1988 (ÆRØMUSHA 588). Steelyard.

Not signed.

1749.

Iron. L630. Turn-over type. Two triangular handles in two fulcrums. Brass weight Dia56 H70. The weight is marked with crowned "C7" and "K.L./1749". The iron beam has two illegible impresses.

1989 (ÆRØMUSFL 372). Balance.

Not signed.

c1900 (g).

Iron beam L115. Swan neck ends. Gal-

lows H60 with pointer. Selflocating knife edges. Brass pans Dia100 H53, suspended in three cords

1990 (ÆRØMUSFL 374). Balance.

Not signed.

c1900 (g).

Iron beam L165. Knife edge, ring bearing, gallows H110. Brass pans Dia103 H28, suspended in three cords.

1991 (ÆRØMUSFL 373). Balance.

Not signed.

c1900 (g).

Iron beam L130. Box ends. Gallows H45. Knife edge, ring bearing. Brass pans Dia103 H100, suspended in three cords.

1992 (ÆRØMUSFL 371). Balance.

Not signed.

c1900 (g).

Probably chondrometer. Iron beam L110. Swan neck ends. Knife edge, ring bearing, gallows. Brass pans like small buckets, Dia60-65 H80, suspended in two cords.

1993 (ÆRØMUSFL 250). Weight.

Signed: crowned "C5" "1698" "8 P"

1698(?).

Brass. Dia80 H80 + handle, total H125.

Ornamented at the side crowned "C5", 70x60; "1698"; "8 P" (for pound Danish). Three stamped indents at the top are illegible. The weight is broken, revealing hollow centre.

Axel V. Nielsen's book from 1944 about Ole Rømer has on page 147 an illustration Fig 58, of a similar weight, which is claimed to be from 1694, when Rømer was heading the Danish Weights and Measures reform. I cannot say whether

this is from the same time, or a later replica. There is a slight difference in the crowned "C5".

1994 (ÆRØMUSFL). Weights.

Not signed.

c1800 (g).

Nest of weights. Brass. Outer Dia 54-30 H40. Hinge and clasp. Three cups, four missing. Marked on the lid "H"; also "T" and a symbol - possibly for the maker. Marked inside "16" (the unit is Lod). Three cups marked 8,4,2. (Lod). The underside is marked "A".

1995 (ÆRØMUSFL). Weights.

Not signed.

c1800 (g).

Nest of weights. Brass. Outer Dia 54-30 H40. Hinge and clasp. Complete except for the last tablet of 1/8. Marked on the lid "C"; also "T" and a symbol - possibly for the maker. Inside marked "16". Seven cups marked 8,4,2,1. The smallest three are not marked.

1996 (URANOBSE). Telescope.

Refracting.

Made by: Cooke, Buckingham Works, York

1896.

Equatoreal mounting in observatory building. Gauss objective Dia 247. Focus 4094 mm. Optics by Carl Zeiss, Jena 1896. Micrometer. Viewfinder Dia 80.

1997 (BANGMUSE 16166).

Range finder.

Not signed.

18th century (g).

Brass plate 127x162x1,5. Brass handle Dia 12 L42. L-shaped cut-out with notches and tongues along the edges

for sighting distant targets. Elaborate schematic instructions on both sides, headed "DISTANCE VISEER TIL FRE-GATTER PÅ 40 TIL 24 CANONER". Marked horizontally "SKIBETS LÆNGDE"; marked vertically "TIL MERSET", "TIL TOPPEN", "8 STYKPORTE", "VANDGANGEN". On the opposite side marked "FRA ØYET TIL VISERET GIVER 1 FOD 300 ALÉN DISTANCE". Obviously made by and for the Danish Navy.

1998 (BANGMUSE 12994).

Draughting rule.

Signed: W. Schultz

c1811 (signature).

Brass. 323x77x3. Marked "Fladstrands Fæstning". "Maalestokke for Ingenieur Corpset introduceret Anno 1811". Six marked scales, (a) "Sande Længde af en dansk Fod autoriseret af C5 Anno 1687", which is the total length of the rule; (b) "Maalestok af 100 Roder eller 600 Alén lig 8 danske Tommer til Fæstnings Planer"; (c) to (f) are reducing scales for draughting.

1999 (BANGMUSE 884). Barometer.

Bulb cistern.

Signed: M. Simon

Late 19th century (g).

Carved wooden base plate L960 max W100. Paper scale behind glass 155x88. Danish text with "Foranderlig" (Change) at 28 (inch). Memory pointer.

2000 (BANGMUSE 21581). Wire

recorder.

Signed: MARCONI'S WIRELESS / TELEGRAPH Co Ltd / No 27581 London

c1908 (g).

Mahogany case 470x200x150. Spring clock drive with air-vane regulator. Two brass pulleys Dia110 placed on the case top like reels of a tape recorder, but there is only one string of wire as a single loop connecting the pulleys. The wire passes through two tape heads one at each side. These consist of a Dia4 glass tube mounted axially in a coil Dia36 L8 which is in the magnetic field of U-magnets.

The use of this, with only one wire loop, is not certain. One suggestion is that it is an early intercom device with a recording head for microphone connection, and the other head being connected to a number of loudspeaker stations.

2001 (SÆBYMUSE 87:5x50).
Electrostatic generator. Friction.
Not signed.

c1900 (g).

Wooden base 885x410x95. Four glass pillars Dia22 H300 support ebonized wooden bearings for wooden axle with Dia500 glass plate. Two other glass pillars Dia28 H335 support the two conductors Dia105 H200 made of gold painted sheet iron and with Dia30 brass spheres. Overall H800. Glass crank broken. Could be locally made.

2002 (SÆBYMUSE 2642).

Differential thermometer.

Signed: C. Weitzmann

c1890 (g).

U-tube capillary H310 W195 with one blackened and one clear bulb Dia42. Brass concave reflectors. Mounted on wooden U-frame. Two pewter scales 40-0-40 in units of 1. Cast iron base 120x120. Overall H570.

2003 (AALBHIST 8207). Balance.

Bismer.

Signed: C.C.S. ANO 1666

1666

Wood Dia40-30 L640. Leaded weight Dia65-45 L160.

2004 (AALBHIST 8091). Balance.

Bismer.

Signed: M.J.D. 1798

1798.

Wood Dia40-35 L730. Lead covered weight Dia80 L120.

2005 (AALBHIST 9303, 10730 etc).

Weights. Five.

Not signed.

c1820.

Probably for steelyards. Brass. Dia~55 H~100. Marked with crowned C5 and years 1820-26.

2006 (AALBHIST 6419,6420).

Nest of weights. Two.

Not signed by maker.

Mid 19th century (g).

Brass. 6419: Dia65-40 H50. Marked on the lid "C 2". Cups marked 16,8,4,2,1. Central tablet missing. 6420: Dia36-24 H20. Marked on the lid "C 8". The cups are marked 2, 1. The two smaller ones are not marked.

2007 (AALBHIST). Weights. Collection of eight square brass weights.

Not signed by maker.

c1856.

Marked: (a) 1P, crowned C5, 3 towers, K, 1856; (b) 1/2P, crowned C5, 3 towers, K, 1856; (c) 1/4P, crowned C5, K, 1856; (d) as c; (e) 1/4P, crowned C5, K, 1854; (f) 4L, K; (g) 4L, crowned C5, K; (h) 2L, crowned C5, K.

2008 (AALBHIST). Weights. Eight.

Not signed by maker.

c1910 (g).

In box 145x90x40. Circular brass weights. All marked crowned C5. 200 GRAM (two), 100 GRAM, 50 GRAM, 20 GRAM (two), 10 GRAM, 5 GRAM.

2009 (AALBHIST). Weights. Eight

Not signed by maker.

1889.

In box 160x83x48. All marked with crowned C5, 1889 and three towers for Copenhagen. 50,20 (two),10,5,2 (two) and 1 QVINT.

2010 (AALBHIST 12994). Weights.

13.

Not signed by maker.

c1900 (g)

In box 160x100x50. Circular brass weights, all marked with three towers for Copenhagen. 1 PUND, 50, 20, 20, 10, 5, 2, 2, 1 QVINT, 5, 2, 2, 1 ORT

2011 (AALBHIST). Weights. 13.

1863.

In box 166x100x60. Circular brass weights with knob. Marked three towers for Copenhagen and 1863. 1 PUND, 50, 20, 20, 10, 5, 2, 2, 1 QVINT, 5, 2, 2, 1 ORT.

2012 (AALBHIST). Surveyor's chain.

Not signed.

c1846.

50 iron links, each 1 Fod = 1/2 Alen. Iron handles. Allegedly from a survey in 1846.

2013 (SVENMUSE 29963).

Voltaic cross.

Not signed.

c1900 (g).

Daniell's electric element as amulet.

Two six-pointed stars 75 mm point to point, one of copper and one of zinc, held together with a piece of cloth inbetween. The copper star is decorated with hebrew signs.

2014 (SVENMUSE 2923). Typewriter.

c1875.

Malling Hansen's machine with sphere. Special with French characters. In case made of wooden frames with glass panels 320x295x290. Cfr item no 737. Made by C.P.Jürgensen, Copenhagen.

2015 (SVENMUSE 23313,-14,-15).

Dividers. Three.

Not signed.

c1900 (g).

For cooper's use. Made of spruce, in one piece, the wood being cut flat, instead of a hinge. Legs L290 with iron points. An arced guide Rad185 with wooden wedge to hold the legs in position is marked with a number of radial lines. Not signed. Probably locally made.

2016 (SVENMUSE 23316,-17).

Dividers. Two.

Not signed.

c1900 (g).

For cooper's use. Made of iron, L225 and L175. Hinged, riveted. Smithed with light ornamentation. Cross section 9x9 at top, triangular near the points.

2017 (SVENMUSE 23331 a-k).

Measures.

Not signed.

c1900 (g).

Collection af 11 of varying lengths and markings. Wood. Have been used by

cooper. Shortest L290, longest L695. Mostly marked with Roman numerals.

2018 (SVENMUSE 90-72x1). Beam compass.

Not signed.

c1900 (g).

Wooden guide L1840 with fixed wooden head L130 at one end and adjustable bracket L130, which can be held in position by a wedge.

2019 (SVENMUSE 6778). Volume measure. 1 Skæppe (about 17.4 litre). 1732.

Copper top Dia340, bottom Dia400 H220. Two handles, ornamented. Bulb along the upper edge. Marked on the side (stamped in the copper) crowned "C5", three towers (for Copenhagen) and 1732.

2020 (SVENMUSE 9877). Volume measure. 1 Skæppe (about 17.4 litre). Late 19th century (g).

Oak, painted green. Two iron bands, one handle painted black. Top Dia335, bottom Dia410, H220.

2021 (SVENMUSE 9926). Volume measure. 1 Fjerding (about 34 litre). Late 19th century (g).

Wood with two iron handles (one is new). Top Dia335, bottom Dia400 H230.

2022 (SVENMUSE 14933,-34). Volume measures. Two. 1885, 1905.

Wood. 1 Pot (about 0.95 litre). (a) Dia75 H150, marked "1 Pot 1885 C5", "K" cut on the edge; (b) Dia100 H185, marked "1 Pot 1905 C5", "K" cut on the edge.

2023 (SVENMUSE 149119. Volume measure. Barrel for coal (Stenkulstønde).

1898.

Oak. Two iron handles. Three iron hoops. Marked: "1/8 S.T.K. 1898". Top Dia300, Bottom Dia370, H355.

2024 (SVENMUSE 14912,-13).

Volume measure. Two.

1910.

Barrel for coal (Stenkulstønde). (a) top Dia200, bottom Dia240, H235, marked "1/32 S.T.K. C5 1910"; (b) top Dia260, bottom Dia300, H270, marked "1/16 S.T.K. C5 1910".

2025 (SVENMUSE 14914,-15,-16,-17,-18). Volume measures for grain. Five. (Skæppemål).

c1910 (g).

Oak with two iron hoops, (a) marked "1SKP 1909 C5", top Dia350, bottom Dia400 H240; (b) marked "1/2 SKP 1907 C5", top Dia285, bottom Dia330 H200; (c) marked "1/4 SKP 1910 C5", top Dia235, bottom Dia265 H160; (d) marked "1/8 SKP 1909 C5", top Dia190, bottom Dia220 H140; (e) marked "1/16 SKP 1910 C5", top Dia155, bottom Dia170 H110.

The museum has a fair number of volume measures.

2026 (SVENMUSE 5418).

Volume measure, for grain.

1866.

Copper. Probably 1 liter. Dia155 Depth80, hemispherical with handle. Marked at bottom of cup "C5 1866".

2027 (SVENMUSE 14935,-36).

Volume measure. Two.

1910.

Sheet iron, (a) Dia88 H90; (b) Dia67 H140. Marked with indents in lead seals "1/2 P", crowned "C5", "1910". (a) is marked "L" indicating certification in Aalborg, and (b) is marked with three towers, indicating Copenhagen.

2028 (SVENMUSE 14937,-38,-39,-40).

Volume measure. Four.

c1910.

Pæglemaal. (1 Pægl=0.242 litre). Sheet iron. Marked with stamps in seals of lead, (a) marked "1/4 Pægl", "1910", Dia44 H45; (b) marked "1/4 Pægl", "1910", Dia37 H65; (c) marked "1/8 Pægl", "1911", Dia37 H35; (d) marked "1/8 Pægl", "1910", Dia25 H56.

2029 (SVENMUSE 21898,23080).

Volume measure. Two.

Made by Glud & Marstands Fabriker A/S, Copenhagen.

c1930 (firm established 1879).

Cylindrical, with handle. Enamel. (a) 1/4 Pægl, white, Dia60 H90, not signed; (b) 0.1 l (Liter), blue-white, Dia57 H58, marked GM7.

2030 (SVENMUSE 25126,-27).

Volume measure. Two.

1935.

Cylindrical. Sheet iron with handle. Stamps of certification on seals of lead. (a) "2dl", "C5", "1938", Dia56, H90; (b) "1dl", "C5", "1935", Dia45, H70.

2031 (SVENMUSE 5789). Weight.

Bronze. Marked crowned "C5" and "1698". Further information needed.

2032 (SVENMUSE 7974,-75).

Weights. Two.

1 Lispund and 4 Lispund. Further information needed.

2033 (SVENMUSE 10527).

Bow spring scale.

Not signed.

Late 19th century (g).

Iron. Spring L100; incl ring and hook L270. Scale 0-300 pund and 0-50 (no units). In the museum's files entered as "Rationsvægt fra et gammelt Skib", i.e. ration scale from an old ship (?).

2034 (SVENMUSE 14923). Weights.

Five.

1910.

Cast iron with handle. All marked crowned "C5" and "1910". 50,20,10,5,2 Pund. The museum has a large collection of weights.

2035 (SVENMUSE 15302). Coin balance.

Not signed.

Late 19th century (g).

Brass. The balance arm L95 has a space provided for one Sovereign and for 1/2 Sovereign and a counterweight at the other end. It is supported by two uprights H15 on a brass base. Has belonged to a company (Baagøe & Riber) trading on England.

2036 (SVENMUSE 15307). Balance.

Bismer.

19th century.

Turned wood (ash?) with lead weight. L670.

The museum has a large collection of wooden bismer balances.

2037 (SVENMUSE 16752). Balance.
Steelyard.

1713.

Wrought iron. L570. Brass weight.
Hook and two triangular handles. Marked in the iron "1704". Marked on weight "HRB 1713".

The museum has a large number of steelyards.

2038 (SVENMUSE 17124). Coin
balance.

Late 19th century (g).

Brass. Balance arm L100 with a space provided for golden 10 and 20 Kroner, counterweight at the other end. Supported by two uprights on a brass base.

2039 (SVENMUSE 35736).

Chondrometer. Ehler's system or 'Hamburg Børsvægt'.

Signed: 4158 F.A.THIELE / KØBENHAVN

c1900 (g).

Black brass funnel with mechanism for emptying, maximum Dia85 L225. Turned wooden base Dia95 H215. Brass pan Dia73 H140. Brass lid with handle. Brass balance L245 with sliding weight; scale 1 to 9, with 9 sorts of grain marked. Wooden box with handle and lock 285x220x120.

2040 (SVENMUSE 35737).

Chondrometer. Ehler's system or 'Hamburg Børsvægt'.

Signed: Kjøbenhavns / hollandske / Børsvægt / 8782

F.A.THIELE. KØBENHAVN

c1900 (g).

Brass funnel with mechanism for emptying. Maximum Dia75, minimum Dia65, H100. Brass pans Dia70 H80 and

Dia75 H40. Wooden striker for levelling of the grain. Balance beam seems to be missing. Mahogany box 250x145x120 with brass handle and lock.

2041 (SVENMUSE 12951). Balance.

For weighing leather.

Not signed.

c1900 (g).

Iron beam L430. Box ends. Gallows H175. Pointer broken. Self centering knife edge. Iron pans 250x270, shaped as part of cylinder, each suspended in four cords.

2042 (SVENMUSE 14914,-16,-18).

Volume measure. Set of three.

c1910.

'Skæppemaal'. (1 Skæppe = 17.4 Litre). Wooden barrels (oak). (a) Maximum Dia400, minimum Dia350 marked "1 SKP"; (b) maximum Dia270, minimum Dia230, H155, marked "1/4 SKP"; (c) maximum Dia180, minimum Dia155, H110, marked "1/16 SKP". All are marked crowned "C5", "1910", "K". The museum has a fair number of similar measures.

2043 (SVENMUSE 8860). Weights.

1829.

Brass. Shaped as frustrum of a pyramid. (a) 47x47, 40x40, H27. Marked "1P", "C5", three towers, "K", "1829"; (b) 37x37, 31x31, H24. Marked "1/2P", "C5", three towers, "K", "1829"; (c) 31x31, 25x25, H18. Marked "1/4P", "C5", three towers, "K", "1829"; (d) 25x25, 20x20, H14. Marked "4L", "C5", "K"; (e) 20x20, 16x16, H12. Marked "2L", "C5", "K"; (f) 16x16, 13x13, H8. Marked "1L", "C5", "K"; (g) 17x17, 15x15, H13. Marked "1" unse (special sign). Foliage at the four corners.

2044 (SVENMUSE 23795). Meter for measuring tape length.

Signed: Sachsisch Maschinenfabrik Chemnitz / P.Hartmann.

c1880 (g).

Iron frame with serrated 10-spoke brass wheel Dia160. Axle with worm engaging toothed wheel, which rotates a scale in front of an index. Scale 0 to 40 in 1/2 units. Spokes on the brass wheel are marked (cast in the brass) 5,10,15,20...50. Has probably been mounted on a production machine.

2045 (SVENMUSE 34891).

Magneto-electric machine.

Signed on trade label: HOLTEN WORSØE / OPTICUS / Bispensgade 19 Aalborg.

c1900 (g).

U-shaped magnet L200. Two rotating coils Dia40 L35 covered by black velvet. Rotation by crank and gears. All mounted in mahogany box 250x120x130.

2046 (SVENMUSE 20224). Drawing instruments. Set.

Not signed.

c1900 (g).

Artificial leather covered fitted box 180x75x25, blue velvet lining. Two brass compasses with steel points L125, pencil and ink point. Drawing pen with ivory handle.

2047 (SVENMUSE 20624). Drawing instruments. Set.

Not signed.

c1900 (g).

Fitted box 175x65x17 covered by artificial leather. Black velvet lining. Compass with interchangeable pencil L125. Brass with steel points. Drawing pen.

2048 (SVENMUSE 5947). Sand glass. 4 hr.

Not signed.

c1800 (g).

Two separate green bulbs, the joining gone. Octagonal endplates 210 mm across. Five wooden pillars H330.

2049 (SVENMUSE 8858). Sand glass.

28 seconds, log glass.

Not signed.

c1900 (g).

Two bulbs joined by wax and cord. Octagonal endplates 76 mm across. H150.

2050 (SVENMUSE 20118,20321).

Sundial. Ring. ('Solring'). Two.

Not signed.

Mid 19th century (g).

Copper rings Dia40 W14. One sliding in the other. A slit along the middle acts as adjustable gnomon. Scale inside the ring 12; 1:11; 2:10; 3:9; 4:8; 5:7; 6:6 for adjusting the rings according to month. Inscription illegible.

2051 (SVENMUSE 29323). Weights.

Box with four (six are missing).

Brass.

Not signed by maker.

1857.

Shaped as frustrum of a pyramid.

(a) 48x48, 38x38, H30, marked "1P", "C5", three towers, "K", "1857";

(b) 36x36, 31x31, H25, marked "1/2P", "C5", three towers, "K", "1857";

(c) 25x25, 20x20, H15, marked "4L", "C5", "K"; (d) 19x19, 16x16, H12, marked "2L", "C5", "K".

2052 (FAABMUSE 16-1971). Level.

Mercury in communicating vessels.

Not signed (probably local make).

c1900 (g).

Wooden case 545x58x54 containing a tray 45x45x40 at each end, connected by a closed channel. Lid missing. Two hardwood blocks 35x35x32 with brass sights, pinhole and horizontal wire. Brass spout for emptying. Brass socket for staff mounting. Has belonged to a master builder.

2053 (FAABMUSE 110x13). Level. Mercury in communicating vessels. Not signed.

c1900 (g).

Mahogany case with hinged lid, 520x40x50, containing a tray 27x27x30 at each end, connected by a closed channel. Floats are missing. Brass spout with stopcock for emptying. Brass socket for staff mounting, H60, Dia15. Used by master builder.

2054 (FAABMUSE 71x7).

Hydrometer. Sike's type.

Not signed.

c1900 (g).

Silvered. Stem L125 with scales 0-7, 7-11, 11-14 and 14-16 all in 1/4 units. Bulb Dia40. Lower stem L60 with threads for weights. Accessory pewter rule with scale correction for temperature; the scale -10 to +50°R in 5°R divisions converts into 1/2 to 3% in 1/4% units. Oval cross sectioned brass box 65x42, H285. The lid has room for four weights (missing) and thermometer (missing). Ring for carrying.

2055 (FAABMUSE 423-1942). Telescope. Refracting binocular, galilean. Signed around the eyepiece: F.A.THIELE / KJØBENHAVN

Signed on the case: F.A.THIELE / Store Kjöbmagergade 39 / Kjøbenhavn c1880 (g).

Turned ivory tube maximum Dia60, minimum Dia45, L70. Brass draw tubes Dia34, L26. Plano-convex objective Dia53 in brass collar. Eye piece in turned ivory ferrule, concave lens Dia22. Focus by central screw. Carrying case, shaped, black leather, red silk lining, leather handle, spring lock.

2056 (FAABMUSE 117x21).

Telescope. Refracting binocular, galilean.

Not signed.

Late 19th century (g).

Brass tube, draw tube and pull-out shades. Tube maximum Dia60, minimum Dia40, L165. Eye piece Dia40, lens Dia25. Single lens double convex objective, single lens concave ocular. Draw tube Dia32, L51. Focus by central screw.

2057 (FAABMUSE 75-1966).

Ear trumpet.

Not signed.

c1900 (g).

Blackened brass. Parabola Dia125, D33. As a chord in the parabola is an open tube Dia~25 - open towards the parabola. The tube extends in a funnel, pointing to an ebony ear insert. This funnel can be pushed into the parabola for transport. Overall maximum L350, minimum L255.

2058 (FAABMUSE 94-152).

Chemicals. Apothecary's portable antidote box. Signed: CAMILLUS NYROPS ETBL / NYROP & MAAG A/S / KØBENHAVN K / KØBMA-GERGADE 43

c1925 (g).

Mahogany 240x200x295. At the top is a compartment for nine numbered vials

with chemicals, graduated glass 0-50 ccm and one pestle. Under this are two drawers with chemicals in cardboard boxes. Booklet with instructions for use in Danish.

2059 (FAABMUSE 494-1942). Gravity toy. Two puppets descending steps. Signed on the instructions: I.G.N. Second half 19th century (g). Displacement of mercury in two side bars change the centre of gravity. Bars L145, puppets H75. Steps of paper covered wood fold into box 260x80x65. Instructions for adjusting cords between the dolls in four languages (germ, fr, eng, ital).

2060 (FAABMUSE). Barometer. Cistern. Not signed. Mid 19th century (g). Walnut, open case. L940. Two scales "Pariser Tommer" (Paris inches) 26-29, Danish text, and "Londoner Tommer" 28-31, English text.

2061 (FAABMUSE 90-1976). Binnacle. Signed on the rim of the brass top: CORNELIUS KNUDSEN'S ETABL. KJØBENHAVN c1900 (g). Teak. H1500, Dia500. Fluted, with compartment for adjusting magnets. Brass top with oval window 300x190. Two oil lamps. Kelvin type compass, 128 points.

2062 (FAABMUSE 183). Telescope. Refracting. Signed in the draw tube: I.Introzzi & Co / London Mid 19th century (g).

Leather covered wooden tube Dia56 at objective end, Dia45 at the eyepiece end. Brass ferrule for objective, but lens is missing. Sliding dust cover. One draw tube Dia30, L310, push fit focus. Erecting lens system. Huyghen's ocular. Eyepiece dust cover, sliding shutter. Overall L510 to 830.

2063 (FAABMUSE 1032). Weights. Four. 1818. Brass. Square, shaped as frustrum of a pyramid. (a) 46x48, 41x44, H27. "1P", crowned "C5", three towers, "K", "1818". (b) 36x35, 33x32, H24. "1/2P", crowned "C5", three towers, "K", "1818" (c) 31x30, 25x24, H20, "1/4P", crowned "C5", three towers, "K", "1818" (d) 20x20, 18x18, H10, "2L", crowned "C5", "K".

2064 (FAABMUSE 16-1977). Volume measure. Five. 'Pottemål'. Signed, stamped underneath: "L.BUN-TZEN", three towers.

1880. Pewter. Cylindrical with handle. (a) Dia87, H185, "1P", crowned "C5", three towers, "1885"; (b) Dia71, H147, "1/2P", crowned "C5", three towers, "1875"; (c) Dia56, H116, "1O", crowned "C5", three towers, "1882"; (d) Dia46, H88, "1/2P", crowned "C5", three towers, "1882"; (e) Dia35, H72, "1/4P", crowned "C5", three towers, "1884".

2065 (FAABMUSE 100x43,44,45,46,47). Volume measure. Five. 'Pottemål'. Not signed by maker. Mid 19th century.

Copper. Cylindrical with handles. (43): Dia108, H219. "2P", crowned "C5", three towers, "K"; (44): Dia78, H213, crowned "C5", three towers, "K", "1854"; (45): Dia70, H135, crowned "C5", three towers, "K", "1854"; (46): Dia56, H103, crowned "C5", three towers, "K", "1854"; (47): Dia50, H75, crowned "C5", three towers, "K", "1838".

2066 (FAABMUSE 82-1966).

Telescope. Refracting.

Signed in draw tube: C.G.Collin / Stockholm / Af / Kongl. Svenska Regeringen / till / Sjökaptenen N.H.Mogensen / för ådagalagdt berömvärdt handlingsfatt / genom bergandet och wärdandet af fem i / sjönöd stadde Svenske fiskare / 1867 1867.

Leather covered wooden tube Dia64-54 L745. Objective end with L115 push fit shade. Objective Dia52. Brass collar at eyepiece end Dia48 L90. Draw tube Dia36 L160 push fit focus. Upright image. Oak box, fitted.

2067 (FAABMUSE). Telescope.

Refracting.

Not signed.

Mid 19th century (g).

Leather covered brass tube Dia62, L480. Objective Dia40, sun shade L150, push fit dust cover. Draw tube Dia42, L400. Push focus. Eye piece with slide shutter. Overall L920 (extended).

2068 (FAABMUSE 2335). Telescope.

Refracting.

Signed in draw tube: Troughton & Simms / London / Presented by the British Government / to / Captain

J.R.Storm, Master of the Danish Vessel "Fortuna" of Faaborg in acknowledgement of the humane services rendered by him in rescuing the Master and Crew of the Steamer "Hercules" on the 22nd October 1862.

c1860.

Leather covered brass tube Dia48-40, L620. Sun shade L120. Objective Dia43. Push fit dust cover. Visible brass is silvered. Draw tube Dia27, L160. Eye piece with slide shutter. Upright image. Mahogany box fitted 705x95x85.

2069 (FAABMUSE 128-1966).

Compass. Marine.

Signed: August Augsburg / Kjöbenhavn

Late 18th century (g).

Turned wooden bowl with lid. Dia145, H140 (incl lid with knob as handle). Dry card, black print on white, 32 points, fleur de lys at North, foliage at East.

2070 (FAABMUSE 228).

Coin balance. With weights.

Signed, label in the lid: "Waag und Gewicht / macht / von Sr Königl Majestæt von / PREUSSEN / allergnædigst privil Ichtmacher / JOH. PET. POPPEMBERG / bey Sprochbævel im Amt Blankenstein, in der Grafschaft Marck 178"

Second half 18th century (g).

Iron beam L150; swan neck ends. Self locating knife edge. Brass pans, Dia40, supported in three silk cords. Wooden box 183x98x27, fitted for 18 brass weights 16x16 of varying thickness. Extant: "1 NEUE S LsDOR", "1 SEVER", "2 S LsDOR", "1/2 SEVER", "2 PISTOL", "1/2 PISTOL", "1 CARLIN", "1 GINEE".

2071 (FAABMUSE 489-1942). Coin balance. With weights.

Not signed.

Second half 18th century (g).

Iron beam with early swan neck ends.

Gallows H50 with index. Brass pans in three cotton cords. Pans marked at centre: "CM / 8". Wooden box without lid 140x63x15. Five weights marked with symbols for denominations.

2072 (FAABMUSE 103-39).

Magneto-electric machine.

Not signed.

c1900 (g).

U-magnet L205. Two coils Dia45 L45, covered with black velvet, rotating at the side of the magnetic poles. Cast brass crank. Cast brass large and small pulleys. All mounted in mahogany box 260x125x120 with lock and key.

2073 (FAABMUSE 71x1,2,3,4,5).

Chondrometer.

Signed at bottom of funnel: D.F.E.

Signed at side of large pan: R185 / 1861

1861 (g).

Brass. Three brass funnels, (a) Dia115-75, H155; (b) Dia80-50, H105; (c) Dia73-47, H93 with mechanism for emptying. Two tins (a) Dia60, H150; (b) Dia100, H220. Iron balance beam L120, gallows H55. Not complete; weights missing.

2074 (FAABMUSE 94-183).

Chondrometer.

Signed: "Denne Vægt er ...rette som / Ehlers (HAMBORG) / L.Jørgensen i Horne / Uhrmager og Mechani.. (illegible).

Second half 19th century (g).

Brass. Funnel Dia70-54, H93. Pan Dia62 H125, in two parts, push fit. Not complete; balance and weights missing.

2075 (HAUCHCOL 703, AWH K11).

Electrostatic generator.

Not signed.

c1790 (g).

Rubber disc rotated in mercury, Van Marum's invention. Mahogany base 645x140. Two mahogany uprights H380 support the axle for the rotatable shellac disc Dia320, the height of which can be adjusted. Semicircular mahogany trough is supported by two glass pillars. Two black brass conductors Dia65 H150 with brass rods L330 and L440 ending in brass spheres Dia20 forming the spark gap. The prime brass conductor is conical Dia50-42 L160 with saw teeth at the narrow end, which is kept close to the rotating plate.

Ref: Van Marum, p 311.

2076 (HAUCHCOL 714, AWH K98).

Conductors. Two.

Not signed.

c1790 (g).

Brass on glass insulators. Mahogany tripod. Glass pillar Dia28 H600 ending in brass collar with brass sphere Dia35 having a hole for a horizontal brass rod with ring at one end and a sphere Dia32 at the other. At the top is again a brass sphere Dia35 with thumb-screw for fitting a brass wire Dia3 L450. Hauch's original description calls this 'apparat for melting metal wire by electricity'. Overall H900.

2077 (HAUCHCOL 710, AWH K6).

Conductor.

Not signed.

c1790 (g).

Brass sphere Dia150 with copper conductor Dia14 L300 ending in brass point, pointing upwards. All mounted on glass pillar Dia25-20 H560 on mahogany tripod. Overall H1600. The copper top is set in a conical socket into the sphere. Wooden box with parts for interchange. On the box is written in hand "poix de la machine d'attoud / p o k" (or n o k).

2078 (HAUCHCOL 712). Conductor. Not signed.
c1790 (g).

Two spheres, copper Dia105 and brass Dia37 at each end of a Dia10 L335 brass rod, which can slide in a sleeve on a ball joint. This again is mounted on a vertically expandable brass rod in a sleeve, fitted to the top of an insulating glass pillar and held in position by a set screw. The glass pillar is a tube, and inside is a brass chain fixed to the top and hanging out from the bottom of the glass tube as earth connection. Mahogany tripod. Overall H1200.

2079 (HAUCHCOL 723). Insulating stands. Two. Not signed.
c1800 (g).

Semicircular shaped glass rods, mounted on top of glass pillars (to support conducting chain). These are fitted to expandable wooden pillars with brass set screw for fixing. Mahogany tripod. Overall H1200, adjustable.

2080 (HAUCHCOL 723). Insulating stands. Three. Not signed.
c1800 (g).
New-moon shaped, black lacquered

heads on green glass pillars. Turned, black painted wooden base Dia160. (a) Glass pillar Dia26 H200, overall H380; (b) glass pillar Dia28 H330, overall H530; (c) glass pillar Dia28 H250, turned fruitwood base Dia250 and mahogany platform Dia240.

2081 (HAUCHCOL 716 AWH K42).

Conductor.

Not signed.

c1800 (g).

Brass sphere Dia90 on Glass pillar Dia15 H250. Turned mahogany and boxwood base.

2082 (HAUCHCOL 722, AWH K16).

Insulating stool.

Not signed.

c1800 (g).

Mahogany 420x250 with two diagonally attached tin foils. Four glass feet H180

2083 (HAUCHCOL 723, AWH K125).

Stands, insulating platforms. Two.

Not signed.

c1800 (g).

Turned mahogany Dia240 on glass pillar Dia28. Turned mahogany base Dia255. Overall H320.

2084 (HAUCHCOL 726, AWH K73).

Discharger, Henley's.

Not signed.

c1800 (g).

Mahogany base 390x100. Two glass pillars Dia23 H250 ending in brass fittings with sliding brass rods in universal joints. The brass rods end in brass spheres to form the spark gap over a central wooden platform Dia120 on expandable wooden pillar with ivory set screw. Ivory foot Dia43 with slit to hold sheet materi-

al and to place on the central platform for penetration by electric discharging. Two mahogany presses each consisting of two pieces of wood pressed together by finger screws. One with brass, the other with wooden screws.

2085 (HAUCHCOL 739, AWH K67).

Electric see-saw.

Not signed.

c1800 (g).

Oak base 390x65. Turned wooden pillar H85 with U-shaped brass bearing for lacquered glass rod Dia4 L350 (broken) with two pith dolls. Electric connection by two brass spheres Dia14 on ebony bases Dia39. The figures are molested.

2086 (HAUCHCOL 731). Electric dance of pithballs.

Not signed.

c1800 (g).

Glass bell Dia135 H250 with brass conductor through the top, having a dish-shaped brass plate inside, almost the same diameter as the jar. Pithballs placed on this will "dance" when charged electrically.

2087 (HAUCHCOL 750, AWH K99).

Electric mortar.

Not signed.

c1800 (g).

Mahogany turned in the shape of an egg cup Dia33. In this fits an ivory body shaped as a cylinder with a convex spherical end. Opposite is a spherical hollow in which fits an ivory sphere. An axial hole drilled in the cylinder is provided with a spark gap. A discharge will blow the small sphere out, demonstrating the expansion of the heated air.

2088 (HAUCHCOL 752, AWH I12).

Decomposition of water apparatus.

Not signed.

c1800 (g).

Hollow copper sphere Dia105 with two horizontal diametrically opposite electrodes, one in an insulating glass tube. On top of the sphere is a vertical glass tube Dia26 H220 inside which are two electrodes and a spark gap with two small brass spheres. Conical copper base Dia110 with opening to the inside of the copper sphere.

2089 (HAUCHCOL 752, AWH I7).

Decomposition of water apparatus.

Not signed.

c1800 (g).

Egg-shaped hollow brass body Dia90, open at the bottom to a brass foot Dia90. The body has two horizontal diametrically opposite electrodes in painted glass tubes. At the top is a brass cock leading to a brass collar for a vertical, slightly conical glass tube with a brass nozzle and stopcock at the top and with an inside wire with a spark gap. Overall H390.

2090 (HAUCHCOL 754). Apparatus for breaking glass by electricity.

Not signed.

c1800 (g).

Mahogany trough, outer dimensions 183x63x68, inner 114x50x58. Two glass tubes are inserted on slant pointing towards the middle of the bottom, containing brass electrodes. An overhead glass rod is supported horizontally by two brass uprights. Vertical grooves in the trough for inserting glass plate between the electrodes.

2091 (HAUCHCOL 755). Apparatus for breaking glass by electricity.

Not signed.

c1800 (g).

Glass cup, at the bottom Dia80, at the top Dia105 H115. Two diametrically opposite spouts with cork stoppers holding electrodes protruding towards the centre of the glass. A glass plate can be placed between the two electrodes.

2092 (HAUCHCOL 741, AWH K62).

Lightning panels.

Not signed.

c1800 (g).

Brass stand, base Dia100 with a horizontal brass beam L320 having a vertical glass pillar H150 at each end. At the top of each pillar is a brass sphere electric terminal Dia18 with a vertical slot for holding a glass plate 250x195 which is also supported in a similar slot in a brass sphere at the middle of the horizontal beam. A cardboard box 255x60x270 with grooved wooden sides contain seven glass panels with different lightning patterns, to be inserted in the instrument.

2093 (HAUCHCOL 756, AWH K117).

Thunder house.

Not signed.

c1800 (g).

Pasteboard. Grey. 125x125x520, like a tower and spire with weather vane on a brass rod leading down through the tower for connection to the inflammable material.

2094 (HAUCHCOL 749, AWH K100).

Thunder pyramid.

Not signed.

c1800 (g).

Mahogany. Base 40x40 H220. Brass sphere at the top from which an inlaid conductor along the side connects to a brass sphere, being one of three feet. The pyramid is in two halves with a small compartment for gunpowder between.

2095 (HAUCHCOL 756, AWH K119).

Thunder house.

Not signed.

c1800 (g).

Pasteboard. Yellow with red roof. 170x120x220. Brass conductor passing through a chimney.

2096 (HAUCHCOL 747). Discharge

tube. Aurora glass.

Not signed.

c1800 (g).

Brass base Dia160 with brass stop cock and threads for connection to vacuum pump. Egg-shaped glass Dia135 H175 with electrodes ending inside in two brass spheres. Brass collar at the top with the upper electrode passing through leather seal and ending in a ring to facilitate adjustment of the distance between the two brass spheres inside the glass. Overall H500. Vertical brass scale, graduated in inches at the top, indicating position of the ring, and thereby the spark gap.

2097 (HAUCHCOL 748). Discharge

tube. Aurora glass.

Not signed.

c1800 (g).

Lead weighted brass base Dia170 with brass stopcock and threads for connection to vacuum pump. Egg-shaped glass vessel Dia160 H340. Brass collar at the top with conductor ending internally in a brass sphere and externally in a

hook for hanging on a conductor of a generator. Overall H540.

2098 (HAUCHCOL 773, AWH K116). Multiplier. Cavallo's.

Not signed.

c1800 (g).

Wooden base 182x72x20. Brass pillar Dia20 H60 with two rotatable horizontal arms. These have glass stems Dia8 L50 ending in horizontal circular brass plates Dia45 with a brass plate of same diameter supported on a glass pillar below. Overall H110.

2099 (HAUCHCOL 774, AWH K116a). Multiplier. Bennett's.

Signed on the 'EARTH' brass strip: NAIRNE London

c1800 (g).

Mahogany base. 145x50. Two glass pillars H50 support each a vertical brass plate 48x48. One similar brass plate is mounted on another glass pillar on a mahogany arm, hinged on the base, so that the brass plate can be moved between the two first. A fourth brass plate is on a brass rod mounted on a bevelled brass strip that slides in a slot in the base. This is very similar to the 'Cavallo's Multiplier' mentioned in Van Marum p 337. Mahogany box 150x60x120 with sliding door and brass ring for carrying.

2100 (HAUCHCOL 758, AWH K46).

Conductor.

Not signed.

c1800 (g).

Electrical, flexible on a brass reel. 22 meter long. Reel Dia110 mounted in brass stirrup on a glass pillar Dia28 H300 on a brass base Dia165. The spool axle ends in a brass sphere and a glass

crank. Hauch's explanation: 'to demonstrate that a conductor's electrical capacity is in relation to its length. It also serves the investigation of the atmospheric electricity'.

2101 (HAUCHCOL 746, AWH K127).

Discharge tubes. Two.

Not signed.

c1800 (g).

Glass Dia100 L450 with brass collars with spherical conductors at the ends. At one end the cap comes off to reveal connections for vacuum pump. Inside, the conductors end in brass spheres about 350 mm apart.

2102 (HAUCHCOL 744, AWH K57).

Lightning demonstrating glass panels.

Two. Not signed.

c1800 (g).

L1500 W55 with bits of tinfoil so that a scintillation will occur along the panel when connected to a friction generator. Wooden box 1550x150x40, painted grey.

2103 (BANGSTEN). Retorts.

Not signed.

c1800 (inf).

Glass. Collection of six. Green glass. Bulb diameter ca 200, neck length ca400.

2104 (BANGSTEN). Woulfe's bottle.

Not signed.

c1800 (inf).

Glass. Dia140 H250. Three necks. Level marks on the side.

2105 (BANGSTEN). Filter funnels.

Two.

Not signed.

c1800 (inf).

With handle. Porcelain. Maximum Dia150 H160.

2106 (BANGSTEN). Percolator for extraction of drug.

Not signed.

c1900 (g).

Conical vessel, blue enamel outside, white inside. H450, diameter at the top 175 with lid. Ending at the bottom in a spout. 6 cm from the top is a rim Dia210. The lid has a central funnel Dia70 H70 and above the lid rises a blue enameled stand of three feet H215 supporting a ring Dia180, presumably to hold a vessel with fluid to be filtered. All is supported on a riveted iron tripod H1000.

2107 (BANGSTEN). Pharmaceutical chest.

Not signed.

c1880 (inf).

Portable. 420x280x285. Iron bound oak with lock. Fitted and lined with red canvas. 12 bottles: 6 large and 6 smaller. Inset tray for further utensils. The large bottles are labelled "Dubbel Goldwasser", "Dubbel Canehl", "Dubbel Persico", "Dubbel Kimmel", "Dubbel Ratafin", "Dubbel Pomerantzin". Labels on the small bottles are illegible. The labels are marked: IV & B.

2108 (BANGSTEN 272). Balance. Chemical.

Signed: BRUHN & LEHRMANN / KJØBENHAVN

c1880 (g).

Wooden base 530x300x105 with two drawers. Brass pillar, cylindrical below and octagonal above, H440. Sphere finial. Open frame beam L330. Knife

edge pivots. Brass pans Dia140 suspended in U-bent brass rods, H340.

2109 (BANGSTEN 1161). Balance.

Not signed.

c1880 (g).

Wooden base with marble plate 300x100. Upon this is a cast brass pillar, richly ornamented and with knife edge bearing for the equal arm beam. This has two bowl-shaped pans, Dia115 D38, supported in stirrups. The beam L190 is cast bronze and has an index pointer upwards.

2110 (BANGSTEN 1329). Balance.

Signed: ARBO-BÄHR & Co / KJØBENHAVN

c1920 (g).

Wooden base 195x120. Blackened brass pillar Dia12 H70 with knife edge bearing and bracket below for limiting the deflection. Brass beam L120. Index pointing down. Brass strip open frame pans, seem to be shaped for supporting special objects. Which is not known; probably parts missing.

2111 (BANGSTEN 629). Microscope.

Signed: SEIBERT

c1900 (g).

Brass. U-foot. Pivoted pillar Dia20 L130. Substage mirror, plane and concave and iris limiter. Stage with springs for object glass. Revolving head for four objectives. Rack and pinion focus. Two-lens eyepiece. Mahogany box 160x180x400 with two drawers for four objectives, four oculars, object glasses etc.

2112 (AALBHIST 2714). Measure.

Length.

Not signed.

c1900 (g).

Mahogany and brass. Brass measure divided 14 to 24 inch fold into mahogany measure divided 1 to 12 inch in 1/8 inch divisions, marked by inlaid bits of brass. On the reverse is a scale 0-50 cm divided in 0.5 cm. Folding in the same manner is also a thickness gauge, brass L80 and about 1 mm thick.

2113 (AALBHIST 10227). Measure.
Length.
Not signed.
c1900 (g).

Mahogany and brass. Two wooden and one brass rule hinged on steel pivot. The wooden rules divided 1-12 in 1/4 inch divisions by inlaid bits of brass. The brass rule divided 13-24 in 1/4 inch divisions (engraved). Same indications on the reverse, except 1/8 inch divisions. L660 unfolded. Hinged in the same pivot is also a thickness gauge about 1 mm thick, L80.

2114 (AALBHIST 11146). Measure.
Length.
Not signed.
1826 (stamp).

Iron, 1 Alen (ell). L634 plus handle L118 with hole for hanging up. Made of two iron bars, joined by fishplate. Divided at 39, 78, 158 and 463 mm. Marked crowned "C5", and "1826" in oval impression.

2115 (AALBHIST 527x3). Measure.
Length.
Not signed.
c1880 (g).

Slide gauge. Boxwood bar, cross section 20x14 L415. Jaws L104. Scale, scratched in the wood, 0-4 inch in 1/4 inch divisions and 5-13 inch in 1/6 inch divisions.

Marked "84". Probably shoemaker's measure.

2116 (AALBHIST). Measures.
Volume.
Not signed.
1910.

Collection of bushel measures (skæppemål). Oak staves and iron hoops. 1/8, 1/2 and 1 skæppe marked "K" (for Copenhagen), crowned "C5", "1909" or "1910".

2117 (AALBHIST 5865). Sundial.
Universal, equinoctial ring.
Not signed.
c1750 (g).

Brass. Octagonal rococo inspired base with compas Dia40, glass covered, eight-point rose marked OR, ME, OC and SE, also marked with arrow for deviation about 10°. Hinged hour circle Dia70 with engraved scale III to XII to IX. Rod gnomon. Hinged latitude scale. Nicely carved folding sight. Overall dimensions 80x88x12 folded.

2118 (AALBHIST 5866). Sundial.
Horizontal.
Signed: N L V / 1795
1795.

Copper 112x112 with triangular gnomon rivited to the base. Scale IV to XII to VIII in 1/4 hour divisions. Marked: A.J. Elev af : Pol : 57 Gr : 00 / N L V / 1795.

2119 (AALBHIST 7129). Sundial.
Horizontal.
Not signed.
c1900 (g).

Iron 300x300 with triangular gnomon for 57° latitude. H150. Engraved scale 4

to 12 to 8. One edge of the gnomon is chamfered. Marked with seven-pointed star and "Br 57".

2120 (AALBHIST) Measures. Length. Large collection of ell sticks. The oldest dated 1751.

2121 (AALBHIST 1386x). Measures. Volume. 1827-1850. Five different sizes. Copper. Pottemål. Cylindrical with riveted handles. All marked "C5", some marked "L" (for Aalborg) others marked "K" for Copenhagen.

2122 (AALBHIST 5087). Measure. Volume. Signed: W.L.L. Anno 1725 1725. Copper. Dia83 H200. Marked with "C5", 3 towers and waves, "1787", "L". Engraved with procession and allegorical motives and inscriptions, mostly illegible, but the name "Brahe" appears.

2123 (AALBHIST 10289). Measure. Volume. c1780. Copper. Dia82 H205. Riveted handle. Marked: "C5", 3 towers and waves, "1780", "L". Also marked "IC", probably a mastermark.

2124 (AALBHIST). Measures. Volume. Four. 1903-1910. Wood. Turned. (a) 1 Pot, internal Dia78 external Dia91, H220, marked C5 K 1909; (b) 1/2 Pot, internal Dia71 external Dia91, H180, marked C5 K 1906/1910; (c) 1 Pægl, internal Dia57,

external Dia74, H136, marked C5 K 1908; (d) 1/2 Pægl, internal Dia47, external Dia56, H110, marked C5 K 1903/1904.

2125 (AALBHIST 13016). Measures. Volume. Six. c1910. Sheet iron with soldered handle. All marked with lead seals "C5" and 3 towers. (a) 1/2 P, Dia85 H90, 1910; (b) 1/2 P, Dia66 H140, 1911; (c) 1/4 P, Dia35 H65, 1910 (two); (d) 1/8 P, Dia36 H36, 1910; (e) 1/8 P, Dia30 H52, 1910.

2126 (AALBHIST 13015). Measures. Volume. Four. Signed under the bottom: A.BUNTZEN. c1900. Pewter. Cylindrical. With handle. (a) 1 P, Dia85 H180, 1906; (b) 1 P, Dia55 H115, 1898; (c) 1/2 P, Dia69 H145, 1906; (d) 1/4 P, Dia35 H73. All are marked on the side with crowned "C5", three towers.

2127 (AALBHIST 8078,8152,6760). Measures. Toldmål, i.e. grain measure for miller's excise. Three. Not signed. Mid 19th century (g). Copper, hemispherical Dia150 D70. Wooden handle. No 6760 has Dia160 H60.

2128 (AALBHIST 8204). Steelyard. Not signed. Early 19th century (g). Iron with two handles and brass adjustable weight suspended in movable iron ring with hook. Cross section of

iron rod about 10x10, L910. Scale on one side 0-6, on the other 4-15 (pounds). The museum has a large collection of steelyards.

2129 (AALBHIST 5589). Barometer. Huyghen's type. Not signed. c1800 (g).

Oak case H1000 W120 with glass panel 780x100 in opening door. Roof shaped pediment with rosette ornament. Large paper scale with heading "BAROMETRUM HUGENIANUM". Scale on the left side 1-12, on the right side 50-0-50 with allegorical drawings. Danish text. Memory pointer adjustable on copper wire. Mercury column broken.

2130 (AALBHIST 5590). Barometer. Cistern. Signed on ivory plaque: TEATHERS / DUNDEE c1820 (g).

Marine type. Dark wooden case L930 W35, cylindrical brass cistern cover Dia54. Recessed ivory scale 26.5 to 31 in 0.1 divisions, with "change" at 29.5, marked with a fleur de lys. Ivory vernier to 1/100. Text in English. The scale covered by a closing door with thermometer and ivory scale 0-120. The thermometer is broken.

2131 (AALBHIST). Barometer. Cistern.

Signed: Aalborg P. Bianchi Mid 19th century (g). Wooden board L960 W105-45. Mercury tube not covered. Hemispherical wooden cistern cover. Paper scale 25-29 in 1/12 units. Text in Danish. Brass memory pointer on copper wire.

2132 (AALBHIST 6646).

Hydrometers. Three.

Signed: Branteweinprobe A.Cetti fec Kopenhagen c1800 (g).

Glass. Brændevinsprøver, i.e. for distilled spirits. Weight bulb with lead shots. Float bulb and stem. Paper scale 1-16. Overall L145.

2133 (AALBHIST 6198).

Hydrometer. Glass.

Signed in gothic hand writing: Brændeviinsprøver af C.G.Scheutz c1800 (g).

Brændevinsprøver, i.e. for distilled spirits. Weight bulb with lead shots. Float bulb and stem. Paper scale 1-14. Overall L150.

2134 (HAUCHCOL 764, AWH K76).

Volta's pistol. Gunmodel.

Not signed.

c1800 (g).

Turned brass barrel Dia14-12 L165. Placed on wooden gun carriage L250 with wooden six-spoked wheels Dia100.

2135 (HAUCHCOL 759, AWH K52).

Volta's pistol.

Not signed.

c1800 (g).

Brass. Egg-shaped H155 on turned foot Dia55. Screw fit lid Dia45 with insulating central glass tube through which a brass conductor can slide about 8 mm. A hooked end of the conductor comes within spark gap distance of the brass body. At the bottom is a hole, closed by a cork stopper. After loading with hydrogen and air, the pistol is held upside down and fired by nearing it to an electric source.

2136 (HAUCHCOL 760, AWH K53).

Volta's pistol.

Not signed.

c1827.

Turned brass gun barrel Dia60-40 L350. Glass stand Dia26 H210 on turned wooden base Dia220, painted black and red with gold foliage. Overall H400. "1828 Juli" painted under the base, with the same writing as "K53" probably at the occasion of transfer from Copenhagen to Sorø, which was officially in November 1827.

2137 (HAUCHCOL) Leyden jar.

Not signed.

c1800 (g).

For hand holding. Dia24 L150. Painted red, orange and gold.

2138 (SORØAKAD 750). Electric mortar.

Not signed.

Mid 19th century (g).

Boxwood cylinder Dia48 H40 with cylindric hollow Dia11 D20 with spark gap. A spherical body of a waxy material fits into the spherically shaped edge of the hollow and will be blown upwards by the expansion of the air on evaporation of fluid by the electric spark.

2139 (HAUCHCOL 762, AWH K85).

Voltaic pistols. Set of six.

Not signed.

c1800 (g).

Sheet iron cylindrical tins Dia50 H100 with neck for cork stopper. In the side is a conductor in glass insulator to form an internal spark gap. They stand in a ring on a Dia240 platform on a glass pillar Dia30 H280. The conductors connect electrically to neighbouring

pistol, so that they fire one after the other. Turned wooden base. All painted in black, red and gold with gold foliage. Item 2137 probably belongs to the set.

2140 (HAUCHCOL 753, AWH K102).

Apparatus for melting iron wire immersed in water.

Not signed.

c1800 (g).

Brass base Dia100. Vertical glass tube Dia42 H300. At the top is a brass collar with fixture for suspending the wire inside the glass and lower it to touch the brass bottom. Brass sphere at the top for electrical connection.

2141 (HAUCHCOL 751, AWH K104).

Thermometer. Electrical. Kinnersley's.

Not signed.

c1800 (g).

Brass base Dia72 supporting a brass collar Dia48 with a vertical glass tube Dia40 H100 and a glass capillary H200 along its side, forming communicating vessels. At the top of the glass tube is a brass cover with central brass conductor, adjustable vertically. Inside the glass is a spark gap of two brass spheres, one connected to the bottom, the other to the upper conductor.

2142 (HAUCHCOL 751, AWH K105).

Thermometer. Electrical. Kinnersley's.

Not signed.

c1800 (g).

Mahogany base, turned Dia130. Glass pillar Dia18 H200 supporting a brass collar with a glass tube Dia52 H260. At the top is a brass cover with central brass conductor in stuffing box, ending in brass sphere inside the glass forming a spark gap with a conductor supported

at the lower brass collar. The capillary is inside the glass tube and penetrating the upper brass cover sealed, thus forming communicating vessels. Outside the glass, parallel to the capillary is an ivory rod Dia7 H440 acting as scale, marked with black engraved rings at about 26 mm interval (1 Danish inch) and provided with an adjustable indicator. Overall H720.

2143 (SORØAKAD 777a). Thunder house.

Not signed.

Lightning demonstration. Metal base 250x120 on three feet. On this is a Leyden jar Dia65 H130 with central brass rod H350 having a steel point at the top on which a brass rod can balance horizontally. One end of the rod is bent downwards and to this end is rivited a horizontal circular brass plate acting as cloud. The other end has a counterweight (missing). A conical copper roof is supported on an ebonite pillar H250 with connection to a bowl for spirit. The lightning conductor is a pointed brass rod earthed to the base. Made by Weitzmann (catalogue no 167).

Ref: Weitzmann

2144 (HAUCHCOL 788). Leyden jar with removable brass covers.

Not signed.

c1800 (g).

Glass Dia80-55 H115. Brass covers to H50, both inside and out.

2145 (HAUCHCOL 789). Leyden jar.

Not signed.

c1800 (g).

Glass Dia90 H150. Tinfoil inside and outside to H105. Standing in 50 mm

high brass cylinder, black painted and with hook for electric connection. Central conductor with brass sphere at the top.

2146 (HAUCHCOL, AWH K85).

Leyden jar with Chinese painting.

Not signed.

c1800 (g).

Dia100 H180. Bottle shaped with neck and stopper with brass rod as conductor, ending in brass sphere. Overall H270. This has the same AWH number as the voltaic pistols, no 2139; probably being a set.

2147 (HAUCHCOL 784). Leyden jar.

Not signed.

c1800 (g).

The outside tinfoils as pattern of squares. Cylindrical glass Dia130 H200. Mahogany lid Dia135 holding the central conductor.

2148 (HAUCHCOL 784, AWH K94).

Leyden jars. Two.

Not signed.

c1800 (g).

Cylindrical glass Dia145 H195. Tinfoil to H145. Primitive cork stopper Dia115 with central brass conductor ending at the top in a brass sphere and with brass chain for contact inside. Overall H350.

2149 (HAUCHCOL 757, AWH K131).

Electrical discharger, 'the electrical waterfall'.

Not signed.

c1800 (g).

Vacuum jar Dia120-100. At the top is a brass collar with stuffing box for brass conductor holding inside the jar a

small silvered sphere and four circular, horizontal gilded plates with increasing diameters downwards. The conductor ends at the top in a ring as handle for vertical adjustment. Overall H400.

2150 (HAUCHCOL AWH K28).

Electrical discharger, 'the electrical rain'. Not signed.

c1800 (g).

Glass base Dia100 supporting a brass platform Dia90 with six upwards pointed brass pegs H10. Over this is placed a glass bell jar Dia60 H170 having at the top a neck with an ebony stopper with a conductor ending downwards inside the jar in a brass cylinder with six-point serrated edge.

2151 (HAUCHCOL 792, AWH K81).

Leyden jar, 'the luminous Leyden jar'. Not signed.

c1800 (g).

Coated with a substance that seems to contain chips of gold. Glass cylindrical Dia100 H200 with neck and cork stopper with brass conductor, bent to a hook for suspending from generator conductor. The top part of the jar is painted red.

2152 (HAUCHCOL 793). Leyden jar.

Not signed.

c1800 (g).

Placed in sheet iron base from which a glass capillary extends upwards (broken). Cylindrical glass jar Dia140 H240 with neck. Tin foil cover to H160. Top part painted red. Neck Dia30 with cork stopper and brass conductor with sphere. Sheet iron base Dia145 H40. Sheet iron support for glass capillary solde-

red to the base. The capillary follows the side of the jar closely up to its shoulder. At that point the capillary forms a double bend (Z-shape) to continue upwards, either closer to or further away from the centre of the jar. Purpose of the capillary is not known.

2153 (HAUCHCOL 791). Leyden jar.

Double; series connected jars.

Lower jar Dia95 H190. Tin foil to H140.

Mahogany lid Dia75 with central conductor extended upwards to support the upper jar Dia55 H115 having mahogany lid and central brass conductor with brass sphere at the top.

Not signed.

c1800 (g).

2154 (AALBUNIV). Level. Dumpy.

Signed on aluminium base: F.A. THIELE

Signed on the spirit level: Fr.D.R.P.

3678.

c1900 (g).

Brass tube Dia20 L14. Spirit level above the tube. Mounted on crude Y-bearings. Supported on aluminium bracket on circular aluminium base Dia75 with three brass level screws.

2155 (BANGSTEN). Large collection of apothecary fixtures and utensils from the old Svane Apotheke.

Chest of drawers with contents of chemicals etc; Porcelain and glass utensils; stoneware for liquids; chemical glassware; stone and brass mortars etc.

The pharmacy (established 1670) is still existing on the ground floor of the house.

2156 (SILKMUSE 21-42/1960).

Hydrometer.

Signed: Alkoholometer efter

Spendrup Temp 9 Rr

c1900 (g).

Glass. Spendrup's scale 0-16 (100% alcohol = 16) at temperature 9° R. Cylinder glass for fluid to be tested Dia70 H500, base Dia105. Wooden container for the hydrometer.

2157 (SILKMUSE 23/1972). Level.

Mechanical.

Not signed.

c1900 (g).

Spruce. L1730. Cross section 50x100. Above the middle is a pyramidal stand with a plumb bob; overall H480. Probably builder's own make.

2158 (SØFATROE 89-8x7).

Chronometer. Marine.

Signed on the dial: B.PIHL. St. Petersburg / No 23

Signed, plaque on the box: SØLVER SVARRER / IVER C. WEILBACH / COPENHAGEN

c1920 (g).

Brass house with silvered scale Dia75. Roman numerals. Seconds scale. Scale for winding 0-56. Brass gimbals. Oak box 170x165x175 with brass handles.

2159 (SØFATROE 7893). Octant.

Signed: S.HEILBUTH / LIMEHOUSE LONDON

Mid to late 19th century (g).

Ebony frame. One vertical strut and bowed horizontal strut. Limb Rad240. Ivory scale -2 to 100° in 20 min divisions. Vernier to 1 min. Brass T-section index arm. Tangential screw and clamp. Forward double pinhole sight.

Reverse single pinhole. Forward and reverse mirrors. Three shades for index mirror. Ivory note plaque. Threaded hole for pencil, but pencil missing.

2160 (SØFATROE). Octant.

Signed: GALLAGHAN LONDON

Mid to late c1860 (g).

Ebony frame Rad240. One vertical strut and bowed horizontal strut. Ivory scale -3 to 108° in 20 min divisions. Vernier to 1 min. Tangential screw and clamp. Brass double pinhole with sliding shutter. Three shades for index mirror. Ivory pencil holder.

2161 (SØFATROE 21500). Sextant.

Signed: "MARTIN PETERSEN.

SVENDBORG" (watchmaker. Firm founded 1896)

c1910 (g).

Oxidized brass frame. Clover shaped lattice frame. Brass limb Rad190. Inlaid silver scale -5 to 135° in 15 min divisions. Vernier to 15 sec. Magnifier. Tangential screw and clamp. Two telescopic sights, one pinhole sight in telescope tube. Three round horizon shades, four square shades for index mirror. Fruitwood handle. Fitted mahogany box 280x265x140 with brass fittings.

2162 (SØFATROE 33003). Compass card.

Signed: S.HEILBUTH LONDON / HILL & PRICE, 1 BROAD QUAY, BRISTOL / NAUTICAL INSTRUMENTS
Trade label: MARTIN PETERSEN.
SVENDBORG

Late 19th century (g).

Mica, Dia165 with bar steel needle. Sapphire. 64-point card with fleur de lys at North. Black print on white. Wooden case 200x200x60 with sliding lid.

2163 (SØFATROE 90-38x1). Measure. Linear, for internal measuring, depth. Not signed.

c1900 (g).

Square cross section wooden tube 30x30 L940 with brass fittings. In this is sliding a wooden measure, three feet long divided in decimal inches 15x15 L940. The external wooden tube is 3 ft long.

2164 (SØFATROE 17294). Telescope. Refracting.

Signed: Troughton & Simms / London c1860 (g).

Tube Dia50-40 L660. Leather covered. Objective dust cover. White metal draw tube Dia27 L160. Ocular (Huyghen's) inserted as individual lenses. Erecting lens system. Oak box fitted 790x90x80 Inscribed: "Presented by the British Government to Captain Hans Liberoth, Master of the Danish Brig 'Peter Wilhelm' in acknowledgement of his humanity to the crew of the brigantine 'Gem' of Lynn, whom he rescued from their sinking vessel on the 25 November 1861."

2165 (SØFATROE 15126). Compass. Marine.

Signed in handwriting inside the bowl: A.Holst Faaborg

Mid 19th century (g).

Dry. Turned wooden bowl Dia150 H90. Turned wooden lid. Painted white inside. 32-point compass card. H140 including lid.

2166 (SØFATROE 34328). Compass. Marine.

Signed: PASCALL ATKEY & SON / COWES

Mid 19th century (g).

Dry. Tell-tale compass. Cylindrical brass bowl Dia240 H130 in gimbals. Flat glass with central brass pillar and pivot. Compass card 128 points black print on white.

2167 (SØFATROE 7784). Ruler.

Signed: L.PETERSEN / KIÖBENHAVN

c1900 (g).

Mahogany 625x62x7 with inlaid 230x40 boxwood reduction scales with transversals. Marked "DUODEC.TOM."

2168 (SØFATROE 21087). Measure. Length.

Signed: SAMPSON ASTON MAKER BIRM^M WARRANTED BEST BOX

Late 19th century (g).

Folding, two parts. Boxwood with brass joint. Scale 0 to 24 inches in 1/12 inch divisions. Also nine other scales of which one is inlaid brass.

2169 (SØFATROE 34813). Ruler.

Not signed.

Late 19th century (g).

Boxwood with brass fittings. 450x72

2170 (SØFATROE 34946a). Station pointer.

Signed: Hallgrens Eftf / København

c1930 (g).

Brass legs L390, silvered circular scale Dial35, 0-180-0° in 1° divisions with vernier to 5 min. Fitted wooden box 490x165x65.

2171 (SØFATROE 34121). Sextant.

Signed on the limb: Martin Petersen Svendborg

c1900 (g) (firm founded 1896).

Brass frame. Limb Rad190. Silvered scale -2 to 155° in 15 min divisions. Vernier illegible. Magnifier missing. Tangential screw and clamp. Telescope sight with screw fit sun filter. Three shades for horizon, four for index mirror. Fruit wood handle. Box, mahogany, fitted 275x245x125, lined with coarse green material.

2172 (SØFATROE 34713).

Declination compass.

Not signed.

Late 19th century (g).

Brass base 177x57 with mahogany sides H35 and sliding lid. Bar steel compass needle L125. Scales at both ends are +/- 4 lines (probably 1/32 of the circle = 11° 15min). The needle is arrested when the lid is inserted.

2173 (SØFATROE).

Drawing instruments. Two.

Signed: W & H C.

Late 19th century (g).

(a) dividers, brass with steel points, triangular cross section, L180; (b) parallel rule, oak with brass hinges, 300x75.

2174 (SØFATROE 324). Telescope.

Refracting.

Signed: Dolland (sic) / London / Day or Night

c1800 (g).

Tube Dia58 L250, wooden cover L105. Objective lens Dia26. Dust cover slide defective. Three draw, brass tubes. Full length L800. Eye piece (Huyghen's ocular) L60. Erecting lens.

2175 (SØFATROE 15133). Backstaff.

Davis' quadrant.

Signed: "Kiobenn....j D z Sanv 1750" (probably Kiobenhavn = Copenhagen) 1750.

Light wood (probably ash), cross section 20x18, L600 and L460. The small arc 60° has Rad150. The 30° arc is missing. Recess for name plate is there, but name plate missing. In very bad state.

2176 (SØFATROE 35862). Indicator. Signed, label in the box: RICHARD'S / IMPROVED PATENT STEAM ENGINE INDICATOR

Maker: presumably Schaeffer & Budenberg.

c1900 (g).

Brass cylinder with piston and levers for recording on paper, placed on brass cylinder, which rotates back and forth during operation. Brass stop cock. Three boxwood measures for evaluation of the pressure against volume diagram drawn on the paper. Wooden box, fitted 265x260x150.

2177 (AALBHIST 861x1). Measure. Length.

Favnemaal (1 Favn = 1.88 metre, about 1 Fathom). Iron. Cross section 47x29 L1980. Graduated in Alen and Fod. The Alen is divided in 4 Kvarter and the Fod is divided in 12 Tommer. Marked crowned "C5" and "DANSKE ORIGINAL FAUFN ALEN OC FODMAAL. 1684. FOR AALBORG"

The year 1684 indicates the Danish weight and measures act, but this item seems to be newer, but before 1821 according to local information.

2178 (AALBHIST 13023). Balance.

Late 19th century (g).

Iron. Equal arms. Lattice beam L985. Copper pans Dia415. Marked "VERITAS".

2179 (BANGMUSE 27273). Measure.
Hawser diameter and circumference.
Not signed.

c1900 (g).

Boxwood with sliding brass measure like a slide-gauge. Measures diameter and has scale for diameter and cross-section. Tables in the boxwood give weights of "Wire", "Rope", "Hemp", "Shroud" etc. Text in English.

2180 (HAUCHCOL 790a, AWH K82).
Leyden jar. Cavallo's Sperreflaske.

Not signed.

c1800 (g).

Glass cylinder Dia215 H310 tin foil to H220. Sheet iron base with hook for electric connection. Central glass tube as insulator for central cord with brass chain resting on the bottom of the jar. The glass tube is supported at the bottom by a turned wooden foot and ends at the top in a bone (ivory?) collar. The glass tube and glass jar are lacquered.

2181 (HAUCHCOL 786, AWH K80).
Leyden jar. With condenser plates.

Not signed.

c1800 (g).

Jar Dia150 H190 with cork stopper Dia95. Central conductor with brass plate at the top 100x100 and at H400. The jar is placed in a sheet iron base Dia145 H40 on which is soldered a vertical brass rod supporting the other brass condenser plate. Top and bottom painted red. Hauch calls this instrument 'the electric spider'.

2182 (HAUCHCOL 735, AWH K26).
Electric chimes.

Not signed.

c1800 (g).

Mahogany base Dia110. Boxwood pillar Dia30-20 H110 with mahogany platform Dia210. Eight steel chimes of varying sizes mounted on boxwood pillars H60 to H70 placed in a ring. Central brass pillar H150 with rotatable brass cross, four arms L85 of Dia2 brass rod with bent, pointed ends. Rotation by discharge from the points to the atmosphere.

2183 (HAUCHCOL 734, AWH K27).
Electric chimes.

Not signed.

c1800 (g).

Painted wooden basis Dia165. Four glass pillars Dia14 ending in brass collars and spherical finials, with brass ring horizontally resting on the pillars. Two brass rods Dia4 L160 connected in a cross carry four small bells, one suspended from each arm in brass wire. One larger bell supported at the middle by a silk cord. A brass chain from the middle bell provides earth connection. Small brass spheres in silk suspensions transport electric charges from the four small bells to the larger central. H~240.

2184 (HAUCHCOL 736, AWH K35).
Electric slope.

Not signed.

c1800 (g).

Wooden base 420x100 with four glass pillars, ivory fittings supporting two brass rods (rails) L410 sloping from H205 to H175. Two brass wires are joined at right angles at the middle to form a roller, one L80 has a small brass sphere at each end to prevent from rolling off from the rails, and the other L90 has bent, pointed ends. Discharges from the ends make the roller move.

2185 (HAUCHCOL 787). Leyden jar.
Not signed.

c1800 (g).

Dia155 H275. Mahogany stopper
Dia105. Central conductor ending in
brass sphere. Tinfoil in two belts, from
bottom to H100 and from H155 to
H205. Mahogany base Dia155 with tur-
ned horizontal extension and a glass
pillar holding a brass conductor for-
med to follow the glass jar at a distance
of about 20 mm between the two tin-
foils. The inner conductor has a chain
resting on the bottom of the jar, and
two points touching the inside of the
glass by the upper foil.

2186 (HAUCHCOL 793, AWH K96).

Leyden jar with Lane's discharger.

Not signed.

1828 (written underneath).

Shaped mahogany base 220x360 on
three spherical wooden feet. Glass jar
Dia155 H280. Tin foil to H200. Glass
pillar Dia28 H400. Brass top with
adjustable horizontal brass rod ending
in brass sphere. Overall H520.

2187 (HAUCHCOL 793, AWH K96).

Leyden jar with Lane's discharger.

Not signed.

c1800 (g).

Shaped mahogany base 230x360 on
three spherical wooden feet (one mis-
sing). Glass jar Dia135 H290, held to
the base by mahogany ring. Tin foil to
H200. Central conductor in glass tube
to H500, supported inside by wooden
foot and four crossed struts. Beside is
glass pillar Dia28 H420 with brass top
and horizontal adjustable rod, held by
set screw. Overall H540.

2188 (HAUCHCOL 794, AWH K49).

Electrometer. Lane's.

Not signed.

c1800 (g).

Ebonized wooden base, banjo shaped,
240x125. The jar stands in a brass seat.
Glass Dia105 H160. Tinfoil to H120.
Brass top sealed to the glass. Central
brass conductor. Gold leaf fill. Beside is
glass pillar Dia16 H240 with brass foot
movable in slit in the base with scale
L28, graduated in four units with subdi-
vision in three. Screw adjustment. Top
of glass pillar has brass fitting with hori-
zontal brass rod, not adjustable.

2189 (SORØAKAD 807). Daniell's
cell.

Not signed.

Mid 19th century (g).

Copper tray Dia105 H90 on three feet.
From a central point is suspended a
zinc ring. Overall H250. No obvious
provision for electric terminals or
ceramic wall.

2190 (SORØAKAD 795). Electric
stand.

Not signed.

Mid 19th century (g).

Turned wooden base Dia95. Glass pil-
lar Dia16 H280 (made of glass tube).
On the top is a brass platform Dia80
H12, probably for supporting a Leyden
jar or equal. From this extends a bent
brass rod Dia3 L200 ending in a brass
sphere.

2191 (HAUCHCOL 821, AWH K122).

Galvanic apparatus.

Not signed

Early 19th century (g).

Glass jar Dia80 H135 with circular

wooden cover having electric terminals connected to electrodes below.

2192 (SORØAKAD 821). Galvanic apparatus.

Not signed.

Early to mid 19th century (g).

Glass jar 85x60x135 on wooden base 150x120. Two ebony supports Dia12 L80 for brass conductors fit over the glass. These have electric terminals and anode and cathode objects may be suspended from these.

2193 (SORØAKAD 822).

Galvanoplastic medals.

Not signed.

Early to mid 19th century (g).

Two Positive and negative specimens. Copper.

2194 (SORØAKAD 802).

Electrometer. Bohnenberger's.

Not signed.

Mid 19th century (g).

Wooden base Dia 185. Zamboni's columns, two glass cylinders Dia33 H90 sealed into brass collars and fastened to the base have at the top brass covers with brass sphere Dia19 and electric connections between the bottoms. All is covered by a glass dome Dia165 H190 with brass collar at the top, carrying a brass conductor with gold leaf suspended between the spheres of the columns and connected to a spherical terminal at the top. (J.G.F.Bohnenberger, 1765-1831, professor in Tübingen. Invented 1815) Ref: Frick, p 336.

2195 (SORØAKAD 803). Electrometer. Fechner's.

Not signed.

Mid 19th century (g).

Similar to item no 2194, except one horizontal cylinder in stead of two vertical in series. Mahogany base Dia255. Three screw level feet. Glass cylinder Dia24 L105 with two brass spheres on curved brass rods connected to terminals outside glass dome Dia160 H180. At the top brass fittings with inside tweezers for gold indicator blades. (G.T.Fechner, 1801-87, professor in Leipzig).

Ref: Frick, p 338.

2196 (SORØAKAD 823). Apparatus for demonstration of 'Nobili's coloured rings'.

Not signed.

Mid 19th century (g).

Mahogany base 185x185 on three brass feet. In a circular groove fits a porcelain tray Dia150 H55. A Dia10 hole at the centre provides for electrical connection to a wire in the base leading to a terminal. A wooden upright 10x12 H245 supports a horizontal brass bar in a sliding sleeve, secured in position by a set screw. From this a brass rod can be lowered centrally over the porcelain tray. Overall H300. (L.Nobili, 1784-1835, professor in Florence).

Ref: Frick p 443.

2197 (SORØAKAD 824a). Electrolysis of water.

Not signed.

Mid 19th century (g).

Wooden base Dia110. Eccentrically placed brass upright Dia8 with two height-adjustable brackets held by set screws. One supports a conical glass jar (actually a funnel), the other two small hooks on which to hang two test tubes Dia10 L90. Two electrodes are sealed in wax

at the spout of the funnel and connected to the outside.

2198 (SORØAKAD 824b). Electrolysis of water.

Not signed.

Mid 19th century (g).

Wooden base Dia80. In a brass ring base is sealed (probably shellac) a cylindrical glass jar Dia58 H60 with two electrodes. These are connected to two small glass cups (for mercury) Dia8 H10 for external electric connections. Wooden lid with two holes for test tubes. Two test tubes Dia12 L105.

2199 (SORØAKAD 830).

Thermometer. Bimetallic. Breguet's metal thermometer, revised by De la Rive.

Not signed.

Mid 19th century (g).

Wooden base Dia150 with two terminals. Brass ring Dia110 fits just outside the groove in the base, obviously for a missing glass dome. A brass upright H110 holds a helix-bimetal with an index at the bottom and a contact-pin dipping into a mercury cup. Paper scale laid horizontally in a brass ring, scale Dia66 divided 0-360° in 1° divisions. Two radial arms L40 with ivory handles, for zeroing by rotating the central rod, supporting the helix.

2200 (SORØAKAD 941).

Transformer coils.

Not signed.

Mid to late 19th century (g).

Ebonized base Dia196 H60. Central ebonite upright holds a coil of Dia4 copper wire in 20 turns of Dia80 H200. Over this fits an inverted glass cylinder

with two turns of the same type of copper wire, ending in terminals. Overall H320.

2201 (SORØAKAD 801). Voltaic pile.

Not signed (probably made by Weitzmann).

Late 19th century (g).

Iron stand with 80 circular plates of Cu and Zn. H~400.

2202 (HAUCHCOL 850, AWH L6).

Lodestone.

Signed: Le Maire & fils Paris

c1780 (g).

Brass and iron fittings 120x80x90 with brass ring for suspension in mahogany frame. Base 315x100 with two turned pillars and a yoke at H400. The lodestone is fitted in iron shoes to which an iron bar L135 with a suspended brass pan 160x110 can be held by magnetic force.

2203 (HAUCHCOL 853, AWH L5).

Magnet.

Not signed.

c1780 (g).

Cloth (leather?) bound. 35x20x40.

2204 (HAUCHCOL 863a, AWH L26).

Declination compass.

Not signed.

c1800 (g).

Mahogany case 200x110x30 with glass panel lid. Two ivory scales 32-0-32° in 1/2° divisions. Flat magnetic needle L140. Brass rule under the case along one side.

2205 (HAUCHCOL 863b, AWH L25).

Compass.

Signed: JAs BLAIR / NEWCASTLE

c1800 (g).

Mahogany case 125x120x40. Hinged mahogany lid. Silver dial Dia100 under glass. Engraved with 16 compass points, fleur de lys at North, small ornament at East.

2206 (HAUCHCOL 864). Compass.

Chinese.

Not signed.

c1800 (g).

Turned wooden bowl Dia90 H60, including turned lid. White painted inside. Dia50. 24 Chinese signs along the edge. Metal string can be inserted, probably at N-S.

2207 (HAUCHCOL 851, AWH L21).

Magnets. Set of 12 bar magnets.

Signed: LE MAIRE & FILS, PARIS

c1780 (g).

L153. Brass bound and suspended horizontally in mahogany stand. Mahogany base 315x100. Two turned pillars with yoke at H400.

2208 (HAUCHCOL 852, AWH L16).

Magnets. Set of two iron bars.

Not signed.

c1800 (g).

Cross section 8x8 L314 with armatures. Wooden case 350x45x18.

2209 (HAUCHCOL 869, AWH L12).

Magnetic toy.

Not signed.

c1790 (g).

Two lacquered iron fish L110 and pointed bar magnet L130. Printed instructions "Unterricht zu diesen grossen Angel Fischen" and "Unterricht zu diesen Angel Fischen". This is apparently part of a set also including other figures, now missing.

2210 (SORØAKAD 880). Compass needle with built-in wire for Ørsted's experiment.

Signed: CH. OECHSLE / PFORZHEIM

Mid to late 19th century (g).

Wooden case 135x135x36. White dial Dia100. Black print, 0-90-0-90° in 1° divisions.

2211 (SORØAKAD 884). Ampère's electrodynamic experiment.

Not signed.

c1880 (g).

Wooden base 400x240. Two gallow-shaped brass pillars H310 and H350 ending at the top in mercury cups. From these can be suspended rectangles and loops made of light bent brass wire. The ends of the loop dip into the mercury cups. The current can be reversed by turning a partly insulated cylinder mounted on the base. Five alternative circuits. (Andre Marie Ampère, 1775-1835).

2212 (SORØAKAD 885). Ampère's experiment.

Not signed.

Late 19th century (g).

Wooden base 310x155. Gallow-shaped brass pillar H310 L220 has mercury cup at the top. Another mercury cup is at the base. A circuit of brass wire 220x140 is supported with the lower end dipping into the lower mercury cup.

2213 (SORØAKAD 888). Faraday's rotation apparatus.

Signed: C.F.OECHSLE / IN / PFORZHEIM

Late 19th century (g).

Wooden base Dia150 on five feet, two of which are adjustable screws. A wooden

upright support a rotatable spindle Dia7 H120. Ebonite mercury channel Dia40 for electric connection to point from the spindle. Demonstrate rotation of bar magnet in electric field.

2214 (SORØAKAD 889).

Barlow's wheel.

Not signed.

Late 19th century (g).

Wooden base 230x120. Double horse shoe magnet L130. From a brass gallois is suspended a toothed brass wheel between the poles of the magnets.

2215 (SORØAKAD 911). Rheostat.

Wheatstone's.

Not signed.

Late 19th century (g).

Wooden base 360x160. Horizontal boxwood cylinder Dia103 L320 with bearings and crank for rotating. A turned spiral groove in the cylinder contains the resistance wire. A sliding brass contact moves on a brass rod along the cylinder and indicates its position on a brass scale L285, graduated 0-80. At the end of the cylinder is a circular scale divided 0-10 for decimals.

2216 (SORØAKAD 900).

Astatic galvanometer. Model.

Not signed.

Late 19th century (g).

Wooden base Dia160. Three screw feet. Double oblong coil 175x30. Double magnet needle, suspended in brass gallois, one inside and the other above the coil. Overall H330.

2217 (SORØAKAD 901). Multiplier.

Astatic double magnetic needle.

Not signed.

c1900 (g).

Wooden base Dia180 with inlaid brass scale 6-0-6 in 0.1 divisions. Upon this is a rotatable wooden plate Dia145 with a coil in a boxwood reel. Two brass uprights H240 connected by a yoke L100 support a silk cord with the double magnet needle. The plate is rotated by a worm gear operated by a serrated nut. Cylindrical glass cover Dia120 H255 with brass rims. Two sets of coils in boxwood fitting, one for use with differential galvanometer.

2218 (SORØAKAD 1916). Resistance box.

Signed: C. WEITZMANN (catalogue no R1)

c1900.

Wooden base 330x130 with cover. Eight boxwood reels with resistance wire. Ebony scale 0.1; 0.2; 0.2; 0.5; 1; 2; 2; 5 Ω . The shortening brass plugs beside resistances.

Ref: Weitzmann

2219 (SORØAKAD 1910). Resistance box.

Signed: Siemens & Halske, Berlin / Cornelius Knudsen / Kjöbenhavn

Marked: Neusilber / richtig bei 20°

Cc1910 (g).

Wood with ebonite top. 250x120x140. Shortening plugs for 1; 2; 2; 5; 10; 20; 50; 100; 100; 200; 500 Ω .

2220 (SORØAKAD 1905). Resistance box.

Signed: Gebr. Ruhstrat / A.G. / Göttingen

H.STRUERS CHEMISKE LABORATORIUM

KØBENHAVN AARHUS

c1900 (g).

Oak case with marble top. Brass plugs for 0.1; 0.2; 0.3; 0.4; 1; 2; 3; 4 Ω .

There are a number of resistance boxes in the collection.

2221 (SORØAKAD). Faraday cage.

Not signed.

c1900 (g).

Cast iron tripod. Glass pillar Dia22 H200. Iron platform Dia220. Cage of iron net Dia160 H400. Iron cover Dia215. Central brass rod with hook to the inside and brass sphere to the outside. Overall H750.

Nr 2222 (SORØAKAD 900).

Multiplier. Astatic.

Not signed.

Late 19th century (g).

Mahogany base 370x115. The coils are mounted in a mahogany framework about 100x70x100 on top of which is a pretty ivory frame, two pillars Dia5-2 H70 with an ivory yoke and an ivory screw holding the silk cord for the magnetic needles. Circular glass scale Dia70 divided 0-180 twice. A slit in the base 185x10 in which a wooden pillar can be displaced, varying the distance from the coils.

2223 (SORØAKAD 927).

Electromagnetic letter telegraph.

Signed on the transmitter: E. JÜNGER
KJØBENHAVN

Signed on the receiver: E. Jynger i
Kjøbenhavn

c1860 (g).

(a) Transmitter. Mahogany base 155x150. A mahogany upright supports in a bearing a brass plate wheel Dia140. Two electric contacts in the form of brass spring brushes, touch the edge of

the wheel and the wheel a little inside the edge, where 30 insulating pellets are inlaid. Thus, by turning the wheel, the current will be alternatively made and broken. The front of the wheel has a scale, white with black print 130x110. 30 letters correspond to the inlaid pellets. (b) Receiver. Mahogany base 155x150. Two coils. Iron lever operated by the coils forward a brass circular plate by a ratchet mechanism. Scale on the circular plate as on the transmitter.

2224 (SORØAKAD 1946). Induction coil.

Signed: A.Rasmussen / Kjøbenhavn / No221.

c1910 (g).

Mahogany case 160x135x120. Four output terminals. Hammer interrupter.

2225 (SORØAKAD 943). Induction coil.

Signed: Patent / Inductions / Apparat / af / A.Rasmussen / i / Kjøbenhavn
c1910 (g).

Wooden case 205x160x140 with drawer. Wood inlay in the lid. Lock and key. Coil on a boxwood reel Dia50 L100. Hammer interrupter. Four output terminals marked NII, NI, PI, PII. Input terminals marked K and Z. Brass parts except iron hammer.

2226 (SORØAKAD 903). Ammeter.

Electromagnetic, moving iron.

Not signed.

c1900 (g).

Wooden base Dia110. Vertical coil Dia40 H70. Spring loaded iron core. Index to scale on the cylinder Dia20 H90 mounted on top of the coil. Scale 0-9 A - very uneven scale, 0-2 and 7-9

rather small and alike, 2-6 in larger units, corresponding to the tension of the force-balance internal spring. Brass zero adjustment at the top. Overall H220.

2227 (SORØAKAD 1801). Capillary electrometer.

Not signed.

c1900 (g).

Wooden base 205-50. Horizontal glass capillary L90, with cups at each end Dia10 H35 turned upwards in which are dipping copper wires connected to binding post terminals. Glass scale along the capillary 0-7 cm.

2228 (SORØAKAD 906).

Galvanometer. Torsion.

Made by Siemens (inf).

Late 19th century (g).

Two field coils. Two brass vanes for limiting deflection. Mahogany base Dia120. Brass tripod with screw feet. Cylindrical glass cover in brass fittings Dia~85. Overall H150.

2229 omitted

2230 (KUNSTIND). Quadrant.

Signed: "Quadrant / nach der angabe / des / CapKruuse / verfertiget in Copenhagen / von / Johannes Busch 1759".

1759.

Brass. Square frame 200x197 with inscribed circle, the lower half being graduated 90-0-90° in 1° divisions and an index arm with spirit level and vernier to 3 min. At one top corner is a secondary quadrant, Rad80, scale 0-90° in 1° divisions and vernier to 3 min. Spirit

level and sighting vane L165 with pin-hole and fore sight. Overall H240.

2231 (KUNSTIND A63/1915).

Diptych.

Signed: "LIENHART MILLER 1622"

(also marked with signature no 12, shown in Gouk, p 117.)

1622.

Ivory. 100x74. Compass Dia30. Positions for shadow cord 49-54. 33 locations stated with latitudes. Times for six latitudes stated on the dial. Compass face with 16 points and wind symbols. Lunar volvelle, but the brass disc lost. Two pin gnomon dials.

Ref: Gouk.

2232 (KUNSTIND A 34/19). Sundial.

Portable.

Not signed (probably German).

c1700 (g).

Brass. Dia80 H15 with screw lid. Compass with engraved 16 point rose, glass covered. Over this is a sundial with numerals IV-XII-VIII along the edge. Folding gnomon. Brass ornamentation protects the glass. Underneath is a calender stating lengths of days and nights. The lid has on the upper side four circles marked "LITERA DOMINICA", "NUM AUREUS", "Anno Christi", "Epacta Julia" and dates. On the underside adjustable table of moon's phases.

2233 (KUNSTIND B 92/1944).

Sundial. Portable.

Signed: Carl von Mandern / fecit Hafniae

c1730 (CvM: 1685-1740).

Silver. 71x74 with compass Dia40. Engraved dial. Folding gnomon. Arab numerals 4-12-8 with 5 min divisions.

Ornamented leather box 95x80x20 with suède lining.

Ref: J.E.A.Hansen, 'Til de danske Tegnebestiks Historie' in *Industriforeningens Tidsskrift*, Copenhagen, 9 Juli 1886.

2234 (KUNSTIND 79/1942). Sundial. Equatorial.

Signed: bey Johan Martin / in Augsburg.
c1700.

Silver. Octagonal 80 mm across. Compass Dia40. Folding dial Dia72 with diametrical rod for support of gnomon (missing). Plumb bob. Roman numerals. On the rear are four circular dials, (a) Dia45, months and zodiac signs with sun's declination; (b) Dia25, perpetual calendar, marked "Allgemeiner und Immer mehrender Calendar"; (c) Dia20, moon's phases; (d) Dia21, engraved "Stundten Babylon und Italien". Rich foliate decor. Separate silver plate Dia74 with important stars marked. On the rear is engraved a compass rose. List of towns and latitudes. Octagonal leather covered brass box with red velvet lining 85 mm across H18.

2235 (KUNSTIND B5/50). Calendar. Perpetual.

Not signed.

c1750 (inf).

Brass bar, cross section 10x1 L320. Engraved figures 1-31. A bracket with weekdays marked (SMTOTFL) can slide along this. Small brass plates with name of month and number of days can be inserted in the bracket.

2236 (KUNSTIND 46/1950). Compass. Geomantic. Chinese.

Not signed.

c1800 (g).

Turned, brown laquered wood Dia110 H20. Chinese signs in nine circles. Compass house Dia20. No dial, only one diameter line drawn.

2237 (KUNSTIND 1486). Sundial.

Equinoctial. Portable.

Not signed.

c1700 (g).

Gilt bronze and silver. The face is 120x150 with ornamented edge. Four fixed feet and three adjustable screw feet. Silver compass Dia90. Scale 0-90-0-90° engraved along the periphery. Also engraved compass rose. List of cities with latitudes, some with two decimals (e.g. "Copenhagen 55,41"). The Dial ring can be raised along a silver latitude scale 0-85° in 1° divisions. Folding ring and gnomon. Roman numerals. The ring seems to be cast silver. Compass needle arresting. Spirit level. Overall H120.

2238 (KUNSTIND 21/1961). Sundial.

Signed: St de Steensen / Frijsenborg / Elevatio Poli 56 gr 13 Min. / 1773.

1773 (? probably newer).

Cast, gilt bronze. Base 155x155. Richly ornamented dial and elaborate upright to hold gnomon string. H165.

2239 (KUNSTIND 9/1963). Drawing instruments.

Signed: Nairne Cornhill London

c1790 (g).

Wooden case with shagreen cover and silver bottom 70x30x175. Hinged top opens to reveal the ends of the drawing utensils, 12 items of which 9 are extant.

(a) Brass reduction rule with transversals and protractor, trigonometric scales (14 in all), signed: Nairne Cornhill

London, 159x51x2, chamfered edges; (b) Triple parallel rule, ivory with brass links, extended 151x34x2; (c) sector 160x38, many engraved scales; (d) divider, brass, triangular cross section steel points; (e) small divider; (f) drawing pen L93; (g) drawing pen for compass; (g) smaller pen L70; (h) pencil holder for compass.

2240 (KUNSTIND). Measure.

Length.

Not signed.

c1700 (g).

Silver. L315. Graduated in Danish and English inches, subdivided in 1/8 inch. Folds into mahogany measure, graduated in the same manner. Total L627 (open), divided 0-24 and 0-26 inches.

2241 (KUNSTIND 1294). Measure.

Length.

Signed: "J.H. 1800" (and symbols: plane, compass, square)

1800.

Alenstok (ell measure). Inlaid wood (probably mahogany and boxwood). Scale markings by inlaid brass, 1 Alen (L628), 1 Fod (L314), 2 Tommer (= 1/8 Fod).

2242 (KUNSTIND 43/1960).

Drawing instruments.

Signed on protractor and proportional compass: Culpeper fecit

c1720.

Set in brown leather covered case 235x185x40, fitted and lined with red velvet. Ivory folding square L150 with silver hinge; point pricker; ebony pencil holder; compass L150 with detachable point and ink pen and pencil; same, but with small toothed wheel for

drawing dotted lines; silver protractor L161 with foliate cut-outs, forward and reverse scales, polygon scales; sector 152x35; silver proportional compass L170; Silver drawing pen L155; Parallel ruler with elaborate foliate cut-outs and decorations, L160; silver scale ruler 152x33; silver calliper L178. Allegedly belonged to King Chr VIII. (1786-1848)

2243 (KUNSTIND 155/1958). Sector.

Signed: Johannes Pindar fecit

c1740 (inf).

Brass. 247x54x7.

2244 (KUNSTIND B 93/1943).

Drawing instruments.

Signed: GILBERT WRIGHT & HOOKE LONDON

c1800 (g).

Set in green shagreen covered silver bound case 170x70x35. Ivory scale/protractor with transversals, chamfered edges 152x43x2; silver bound ivory sector 160x35x3; triple parallel ruler 151x35x2; silver and steel divider with fixed points L155; divider with detachable point L125; tool: knife/file/screwdriver; extension for divider; compass for small circles etc.

2245 (KUNSTIND 16/59). Drawing instruments.

Signed: Carl von Mandern / A Copenhagen

c1730 (g).

Set in chagreen covered box 200x120x25, fitted and lined with suede. Protractor brass L130, scale 0-180° and 180-0° in 0.5° divisions; brass set square, divided in Hamburger Zoll and Stockholmer Zoll; ebony and brass parallel ruler 175x27; two compasses

with detachable points; drawing pen L140; brass ruler 175x29 with chamfered edge, four scales, "Pariser", "Wiener", "Aamsterdamer", "Londoner Zoll". Reduction scale with transversals "Copenhagener 1/1 Fuss".

2246 (KUNSTIND). Sundial.
Equatorial.

Signed: L.T.M. (for Ludovicus Theodatus Müller, Augsburg)
c1690 (g).

Brass. About 70x70, richly engraved and pierced. Compass Dia35 marked "S", "E", "OR", "M", "E", "OC". Apparently E-E should be North-South. An arrow points from M to S, probably for variation, as the angle between E-E and M-S could well be the variation. Folding arc for latitude. Folding ring dial having diameter with gnomon. Folding sight at South. Underneath are marked 11 cities and their polar distance. Instructions: "Gebrauch dieses Universal-Compasses".

2247 (KUNSTIND A64/19). Sundial.
Butterfield type.

Signed: Delure / Paris
c1695 (fl).

Brass. Octagonal face 68x59. Folding gnomon with adjustable latitude 40-60° (index is the tooled beak of a bird). Three hour scales, for latitudes 40, 45, 50°. Roman numerals for 40 and 50, arabic for 45. Compass Dia29, 16 point compass rose. Cities and latitudes listed on the rear.

2248 (SØOPMAAL). Repeating
Circle.

Signed: Reichenbach & Ertel in
München
c1815 (fl 1814-20).

Brass. Tribrach with level screws. Conical pillar Dia75-45 H140. Two horizontally adjustable telescopes, tube Dia30. Azimuth circle with silvered scale Dia105, graduated 0-360° in 1/4° divisions, no vernier. The angle between the two telescopes to be measured on silver scale Dia235 on six-spoked ring, scale 0-360° in 10 min divisions. Four verniers to 10 sec. Eye pieces Dia18 push fit focus, right-angle prism on one eye piece, clamp and tangential screw. At the top is a reversible telescope mounted on two A-supports at right angle to the upper sighting telescope.

2249 (SØOPMAAL). Telescope.
Refracting.

Signed: Ramsden London
c1780 (g).

Leather covered tube Dia60 L360. Objective Dia56. Push fit dust cover. Erect image. Eye piece Dia20 L150, push fit focus with fine adjustment screw. Draw L120. Folding tripod with straight feet. Brass pillar Dia28 H200.

2250 (KORTSTYR). Theodolite. Alt-azimuth instrument.

Signed on the scale: Ertel in München
Signed on the objective: Utzschneider und Fraunhofer in München
c1810 (g).

Brass. Tribrach with level screws. Brass ring with six spokes as base for sighting telescope; tube Dia43 L520; eye piece Dia24, push fit focus; clamp and tangential screw but no scale on the ring. A ring with eight spokes Dia320 supports another telescope, Dia45 L525. Silvered scale gives angle between the two telescopes. Scale 0-360° in 5 min divisions. Four verniers to 5 sec; magnifiers.

Overall H360. Altitude circle Dia130 scale 0-360° in 15 min divisions, vernier to 1 min.

2251 (KORTSTYR 19). Alidade, for plane table. Telescopic.

Not signed.

c1900 (g).

Brass. Ruler 525x53x6. Telescope Dia28 L330 pivoted near the objective end and adjustable near eyepiece end; silvered scale $\pm 27^\circ$ in 20 min divisions, vernier to 1 min. Magnifier, clamp and tangential screw. Spirit levels above the telescope and on the ruler. Rack and pinion focus.

2252 (KORTSTYR). Theodolite, simple.

Signed: E.JÜNGER KJÖBENHAVN
c1860 (g).

Brass. Tribrach with screw level feet. Base Dia215 with closed scale visible through two windows. Two A-supports for the axle L250 for telescope at one end and counterpoise at the other. Scale 0-360° in 15 min divisions, vernier to 15 sec. Spirit level. Telescope adjustable for altitude, but there is no altitude scale. Two opposite azimuth readings; magnifiers. Telescope tube Dia27 L290. Objective Dia27. Eye piece Dia20, rack and pinion focus. Spirit level. Inverse image.

2253 (KORTSTYR).

Transit instrument.

Maker: Carl Bamberg, Friedenau
1893 (acquired)

Iron base 750x260 with two A-supports H270 for the E-W axis. Telescope Dia100 L500 supported by four rollers. Brass ring Dia160 with scale 0-360°.

Telescope reading through the axle. Claimed accuracy 0.03 sec latitude and 0.06 sec longitude. Overall H700 and L920 along the axle.

2254 (KORTSTYR). Telescope.

Refracting.

Signed: DOLLOND LONDON

c1800 (g).

Terrestrial. Brass, mahogany covered tube Dia115 L1070. Objective Dia92. Eyepiece Dia35 L325. Rack and pinion focus. Erect image. Viewfinder. Mahogany tripod. Two supporting telescopic struts. Azimuth fine adjustment. Worm gear and semicircular rack for altitude adjustment. Overall H1600,

2255 (KORTSTYR 207). Theodolite.

Signed: JULIUS WANSCHAFF / BERLIN

1903 (inf).

Brass ring base with three screw level feet. Silvered azimuth scale Dia270, 0-360° in 20 min divisions, micrometer scale 0-50/0-50 on the circumference; two opposite reading telescopes with electric light; clamp and tangential screw. Tapered pillar Dia~80-60 H130. Heavy steel stirrup supports the axle for telescope and altitude scale. Telescope Dia55 L550, side mounted, eye piece not complete. Altitude scale Dia280, silvered, but illegible, two reading telescopes with micrometers. Spirit level. Overall H620.

2256 (KORTSTYR). Theodolite, simple.

Signed: Hildebrand Freiberg. Sa / No
52840

c1890 (g).

Azimuth instrument. Oxydized brass.

Telescope Dia52 L660 in bearings on a Y-frame rotatable on the azimuth scale. Crossed spirit levels. Eight-spoked ring base Dia280 with scale 0-360° in 5 min divisions; two opposite reading telescopes with light. Overall H400.

2257 (KORTSTYR 205). Theodolite.
Signed: Max Hildebrand früher Aug
Lingke u Co / G m b H / Freiberg
Sachsen / No 64662
c1890 (g).

Oxydized brass. Circular base with three screw level feet. Telescope Dia36 L320, rack and pinion focus, dust cover. Closed horizontal azimuth scale with one window and two opposite reading telescopes. Scale 0-360° in 1° divisions; telescope readings to 10 min. Vertical scale Dia180; silvered but illegible. Two spirit levels, one striding.

2258 (KORTSTYR). Theodolite.
Signed on the base: Troughton & Simms, London / 1829
1829.

Brass. Base Dia400 with tribrach and screw feet; closed scale with two opposite reading telescopes. Clamp and tangential screw. Twin tapered pillars Dia85-50 support the two ends of the telescope axle in Y-bearings and double steel rollers. Telescope Dia55 L565 mounted between two six-spoked brass rings with silvered altitude scale 0-90/0-90/0-90° in 1 min divisions; Two opposite reading telescopes. Eye piece missing. Overall H780.

2259 (KORTSTYR). Theodolite.
Transit.
Not signed.
c1860 (g).

Brass. Tribrach with screw level feet. Horizontal six-spoked ring with scale 0-360°, divisions not legible; two opposite reading telescopes; clamp and tangential screw. Central tapered pillar Dia55-45 H65 supporting stirrup with two Y-bearings for telescope axle and two six-spoked rings with silver inlay scales on both rings (not legible), clamp and tangential screw. Striding spirit level. Overall H570.

2260 (KORTSTYR). Theodolite.
Transit.
Signed: Max Hildebrand früher
Aug.Lingke u.Co / G m b H / Freiberg
Sachsen / No 60598
c1900 (g).

Oxidized brass. Ring base Dia340, three screw level feet. Closed horizontal scale Dia~250 with two opposite reading telescopes. Stirrup support with Y-bearings. Altitude scale Dia270. Scale in 1/36° divisions. Striding spirit level. Telescope Dia60-75 L320. Overall H750.

2261 (HAUCHCOL 727). Insulating stand.
Not signed.
c1800 (g).
Leaded brass base Dia120. Glass pillar Dia25 H200. Circular brass platform Dia160.

2262 (HAUCHCOL 737, AWH K37).
Electric discharge to atmosphere.
Not signed.
c1800 (g).
Leaded brass base Dia100. Baluster shaped glass stand Dia45-20 H150. Brass point at the top H200. Brass sphere Dia65 balances on its inside on this

point. A brass rod L260 protrudes horizontally from the sphere and has at the end a small (10mm) brass point from which an electric discharge can make the system rotate. Overall H440.

2263 (HAUCHCOL 737, AWH K36).
Rotating glass ball ("electrical circus").
Not signed.

c1800 (g).

Leaded brass base Dia120. Baluster shaped glass stand Dia45-20 H150 supporting a circular glass plate Dia295 H8 with a tin foil ring Dia205-240 and connected by a tin foil strip under the glass to a central brass knob as electric terminal. Along the edge of the glass plate is a brass ring, inner Dia247, outer Dia287 insulated on three glass pillars and elevated 30 mm over the plate. Four hollow glass spheres Dia~50 are supposed to rotate on the glass plate, inside the brass ring.

Ref: George, p 299.

2264 (SORØAKAD 720). Rotatable
brass conductor.

Not signed.

Mid 19th century (g).

Iron tripod with brass pillar Dia8 H280 ending in steel point. On this balances a brass rod Dia4 L370 with brass sphere Dia30 at one end and an ebonite handle Dia20 L160 at the other.

2265 (HAUCHCOL, AWH K49).

Leyden jar with Lane's discharger.

Not signed.

c1800 (g).

Jar of lacquered glass Dia105 H125, tin foil to H80. Brass base connected to pillar Dia12-6 H200 supporting adjustable rod with brass sphere for the dischar-

ger. The central conductor is missing. The jar is broken.

2266 (HAUCHCOL). Electrostatic
lunarium.

Not signed.

c1780 (g).

Fruitwood base Dia62 and pillar ending in steel point, overall H120. On this balances a brass rod L110 with two ivory spheres Dia18 and Dia13. The larger has lines for polar circles, tropics, equator and ecliptic. A tangentially directed brass point from the brass rod causes the system to rotate by discharge.

2267 (HAUCHCOL 713). Electric
conductors.

Not signed.

c1800 (g).

Brass, some glass insulated. Collection of 10, varying dimensions. Mostly with hook for suspending from other conductors. Lengths from about 500 to 1000 mm.

2268 (HAUCHCOL 771, AWH K112).
Electrophorous. Double.

Not signed.

c1800 (g).

Resin disc in frame of sheet iron 640x310x40; the resin about 10 mm thick on wooden base with red felt underneath. Two discs of wood covered with tin foil Dia250. Glass handle Dia15 L250 ending in ivory fitting with ring.

2269 (HAUCHCOL 770).

Electrophorous.

Not signed.

In sheet iron sole Dia310 H8. Resin H~6, broken, and about 1/3 missing.

The underside marked by a stamp including the letters "??ELB??" and "1764", but somehow the instrument seems younger.

2270 (HAUCHCOL). Wisp of horse hair L250.

Not signed.

c1800 (g).

Fastened by cord and wax to brass rod L300 with brass sphere Dia18 at the end. The rod is bent, so as to be hung on a conductor. It has been assumed to be a wisp for use with an electrophorous, but could also be to demonstrate the repelling action of electricity.

2271 (HAUCHCOL 742). Lightning demonstration.

Not signed.

c1800 (g).

Seven lightning pillars, glass tubes Dia15 H230 with small diamond shaped foils in spirals down the tubes. Brass ring base Dia295 on three screw level feet. The ring has three spokes. At the centre is a glass pillar Dia22 H140 extended upwards in a brass point on which can rotate a brass rod L230 with a sphere at each end. Discharge will take place, when the rotating rod approaches the pillars.

Ref: La Fond, Tome 2, p 343 PL XXIII Fig 5.

2272 (HAUCHCOL). Discs for electrophorous. Three (not a set).

Not signed.

c1800 (g).

(a) Brass Dia240, glass handle Dia22-31 L220; (b) brass Dia105, glass handle to screw on, brass fitting; (c) brass Dia91, ebonite handle Dia15 L110 to screw on.

2273 (HAUCHCOL 866, AWH L23).

Compass. Azimuth.

Signed: O.P.Sangaard / Kiøbenhavn

c1800 (g).

Wooden bowl 190x190x80. Glass cover fastened with putty, which is marked by impressions: stars and flowers. Slit and wire sights. The glass marked with crossed lines (N-S and E-W). Brass gimbals. Oak case 280x280x155 with sliding lid. Dry compass card. Black print on white, 0-90-0-90°, 32 compass points. Fleur de lys at North, acanthus leaves at East and centre.

2274 (HAUCHCOL 715, AWH K38).

Brass conductor on insulating stand.

Not signed.

c1800 (g).

Brass cylinder Dia50 L440 with sphere Dia65 at both ends. From one end extends horizontally a brass rod Dia12 with brass sphere Dia35 and Henley electrometer. Glass pillar Dia30 H300 on leaded brass foot Dia125. Overall H460.

2275 (HAUCHCOL 785). Apparatus to demonstrate discharges from points to the Leyden jar.

Not signed.

c1800 (g).

Mahogany base 370x135 on brass feet. Glass pillar Dia20 H125 supports a wooden platform Dia120 for a Leyden jar. Part of the base is a slide in dove-tail guide, with a glass pillar Dia20 H270, brass top with fitting for adjustable brass rod with two brass points and a brass sphere. Further, a brass plate can slide under the wooden base having a brass pillar H220 and a brass point at the top, pointing to the outside of a

Leyden jar, placed on the platform.

2276 (HAUCHCOL 790b, AWH K83).

Leyden jar. Danish: 'sperre flaske'.

Not signed

c1800 (g).

Dia85 at the bottom, Dia60 at the top, under the neck Dia25. Internal conductor missing. Defective.

2277 (SORØAKAD 928).

Morse receiver.

Signed: Siemens & Halske / BERLIN / No 638

c1880 (g).

Two vertical coils Dia30 H60. Brass rocker. Heavy brass housing for clock and paper transport. Weight driven clock. Air vane regulator. Mahogany base 340x215. Separate relay. Wooden cover with five glass panels 320x160x170. Two galvanometers, wooden case 150x60x170, marked No 1281 and No 1732.

2278 (SORØAKAD). Morse receiver.

Signed: Prof. E. Jüngers Etabl / KJØBENHAVN / No 66

A paper label tells of repair in 1930.

c1880 (g).

Two vertical coils Dia30 H55. Brass housing 180x70x140 for spring driven clock. Air vane regulator. Paper supply reel on top of the clock house. One end of the house slides open to reveal the mechanism. Wooden base 290x100.

2279 (SORØAKAD 914).

Wheatstone's bridge.

Not signed.

c1880 (g).

Mahogany base 650x105. Iron bar section 18x12 L580 graduated 0-48 in 2 mm

divisions. Electric terminals at both ends. Sliding brass contact fitted with clamping and index for reading the scale. Brass conductors cross section 17x12.

2280 (HAUCHCOL 315, AWH G177).

Hydrogen lamp.

Not signed.

c1800 (g).

Glass bottle with brass bottom Dia100 which has a small valve, opening when the bottle is placed on a flat surface. At the top is a Dia32 brass neck with valve, hydrogen nozzle and spark gap. A black painted sheet iron cylindrical jar Dia125 H235 on three feet can contain the bottle. When filled with water, the contents of hydrogen will come under pressure. The spark gap will have to be connected to an electrophorous or equal.

2281 (HAUCHCOL 867, AWH L28).

Dip circle.

Not signed.

c1800 (g).

Mahogany base 450x240. Rotatable case 435x130x500, front and rear are doors with glass panels. Inside is suspended a brass ring inner Dia310, outer Dia370. Two parallel horizontal diametrical bars have bearings at the centre of the circle for the magnetic needle and lift mechanism for same. Needle L307 lens shaped cross section. Scale on the ring 0-90-0-90°, 0-0 horizontal, 90-90 vertical. Three scales (a) 1° divisions; (b) 1/2° divisions; (c) 1/6° divisions.

The instrument is made to the suggestions of Thomas Bugge (1740-1815) professor of astronomy at the university of

Copenhagen (inf) probably by Johannes Ahl or Jeppe Smith.

2282 (HAUCHCOL 781, AWH K44).

Capacitor. Variable, air.

Not signed.

c1800 (g).

Mahogany base 535x200. Two mahogany plates slide in grooves in the base, each having a glass pillar Dia30 H250 with brass collector plates Dia160 at the top with ivory Henley electrometers. Between the collectors is a glass pillar H200 with brass holder for di-electric (glass) plate. Overall H530.

2283 (HAUCHCOL 775, AWH K114).

Cavallo's collector.

Not signed.

c1800 (g).

Mahogany base 540x160 with four wooden screw feet. Two red painted glass pillars Dia18 H200 support vertical brass conductor Dia23 H250 with a brass platform Dia85 at the top. Between the two pillars is a tin foil covered wooden plate 360x215. On each side of this is a mahogany frame 320x460 with a tin foil covered plate 310x215. The frames are hinged to the base so that the tin foils coincide. Overall H590.

This instrument is by Hauch called: Nicholson's duplicator.

2284 (HAUCHCOL 775, AWH K115).

Cavallo's collector.

Not signed.

c1800 (g).

Two mahogany feet connected by a wooden bar L400. On each foot is a glass stand Dia26 H200 supporting a tinned sheet iron plate 360x210. On each side of this is a mahogany frame

325x445 hinged to the base and with tinned sheet iron plates 310x220 coinciding with the fixed plate. They can be lowered to each side of the central plate. Overall H475.

2285 (SORØAKAD 783). Capacitor.

Not signed. Model.

c1840 (g).

Two brass plates Dia135, one of them on three feet Dia7 L20, the other with ring for suspending in a string over the first.

2286 (SORØAKAD 652).

Steam engine. Model.

Not signed.

c1840 (g).

Wooden model of Watt's engine with water pump and steam condenser. 1450x1250. The model can be made to 'operate' piston, slide valve, pump piston with check valve by turning a crank at the flywheel.

2287 (HAUCHCOL 872, AWH L7).

Rotating horseshoe magnet.

Not signed.

c1800 (g).

Mahogany base 495x210. Brass crank turns mahogany pulley Dia130 on vertical axle operating another pulley Dia70 in brass fittings, turning a horse shoe magnet on the same spindle. Magnet about 140x100. Above the magnet is a wooden platform Dia200 on three turned wooden pillars Dia17-13 H310. In the platform is a recess in which can be placed circular Dia145 plates of various material to examine the influence on the rotating magnetic field. Overall H365.

2288 (SORØAKAD 776). Electrostatic generator. Carré's induction type.

Signed: G.W.KLEIN / KJØBENHAVN
c1880 (g).

Mahogany base 415x215x70. Ebonized wooden pillars H415 and H225 are extended by glass to H590 where they support a brass conductor Dia70 L600 with brass sphere at one end. The wooden pillars support a crank with pulley Dia215 and pulley Dia25 on common axle with rotating ebonite plate Dia390. Glass (or ebonite) plate on a lower positioned axle is missing, but leather cushions for this plate are there. In Carre's generator, static electricity is generated by friction on one plate, and from this the charge is increased by induction with another ebonite plate.

2289 (SORØAKAD 926).

Electromagnetic motor.

Signed: Etablissement for physiske
Instrumenter / Julius Nissen /
KJØBENHAVN
c1870 (g).

Pump model. Wooden base 470x260. Two brass pillars Dia15 H150 with a yoke carry two vertical coils Dia50 H60. Between these is a vertical axle with, over and under the coils, two six-spoked permanent magnets L144 (diameter). Cross section of the spokes 20x7. The top one has North outwards, the lower one South. The axle is by an eccentric connected to two pumps with pistons moving in glass cylinders, placed in a sheet metal tray 160x125x60.

2290 (SORØAKAD 777). Electrostatic generator. Holz's induction type.

Signed: Avancer No 787
c1890 (g).

Oval wooden base 490x315. Two ebonite pillars Dia29 H200 hold plus and minus collecting combs and conductors to two Leyden jars. Wooden pillar Dia55 H250 holds axle for counterrotating glassdiscs. These are broken, but about Dia300. There have been six metal buttons on each disc. Belt drive from a crank mounted on a wooden pillar supported by a wooden slide in the base for tightening the belt. Made by C.Weitzmann, Hillerød.

2291 (SORØAKAD 778). Electrostatic generator.

Signed: C.Weitzmann's Etbl / Hillerød
Kbhvn
c1900 (g).

Induction type. Mahogany base 450x270. Two circular ebonite discs Dia400 and Dia360, one is fixed, the other rotatable. This is a modified version of Holz's generator, probably invented by Weitzmann.

2292 (SORØAKAD 902). Tangent galvanometer. Tangens boussole.

Not signed.

c1900 (g).

Wooden base Dia300, three screw level feet. Brass pillar Dia36-28 supports a compass, and by two struts a mahogany ring inner Dia330 outer Dia470 with six circular conductors made of Dia4 copper wire. This is one long wire, but can be connected so that only part of it is in the electric circuit. Compass with brass case Dia160; scale 0-90-0-90° in 1° divisions. The needle is supported by a L200 thin cord suspended from the top of the pillar, and protected inside same.

2293 (HAUCHCOL 745, AWH K61).

Lightning panel.

Not signed.

c1800 (g).

Wooden frame 480x720 with glass panel 400x550 having bits of tin foil forming monogram "C7".

2294 (HAUCHCOL 743). Lightning tube.

Not signed.

c1800 (g).

Double glass tube, outer Dia25 L700 terminating in brass fittings, at one end with ring for suspension, at the other with a brass sphere Dia25. On the inner tube is fastened a spiral of small diamond shaped tin foils, creating a 'lightning' of sparks.

2295 (HAUCHCOL 685, AWH K15).

Boxwood stand with lacquered glass hooks for suspending light objects as pith balls, feathers etc.

Not signed.

c1800 (g).

Base Dia120, pillar H300; four glass arms L240. Overall H370.

2296 (SORØAKAD 1044). Model of tin mine in glass flask 105x105x220.

Shown in four floors.

Not signed.

Mid 19th century (g).

2297 (SORØAKAD 647).

Steam engine. Model, toy.

Not signed.

Mid 19th century (g).

Boiler, brass Dia45 H80. Mounted directly on that is the cylinder Dia9 L33 with vertical spindle to the crank with above mounted flywheel Dia64. Slide

valve action by rocking of the cylinder.

Screw filling stopper with safety valve.

Overall H165. All supported in a glass, with a brass flange resting on the edge of the glass.

2298 (HAUCHCOL 871a, AWH L8).

Toy. Magnetic. 'The painter'.

Not signed.

c1800 (g).

Paper covered wood or pasteboard case 125x118x27 with motif of artist at work at the easel. Eight different paintings can be called to appear at the easel by inserting plates with hidden magnets. Four plates with a motif on each side.

2299 (HAUCHCOL 871b, AWH L10).

Toy. Magnetic. 'The swan'.

Not signed.

c1800 (g).

Wooden case 300x300x85 with brass tray Dia210. The rim of the tray is covered with coloured paper showing cards and figures and incorporating 16 wooden capsules Dia14 L70 containing slips of paper with solutions to riddles, given by positioning a brass pointer on a drawer, placed under the brass tray, at the same time positioning a hidden magnet. (e.g. "Wass ist bey der Mahlzeit das unentbehrlichste?... Der Mund!"). A magnetic swan in the water-filled tray is led to the capsule with the correct answer.

2300 (SORØAKAD 672). Dewar

flasks. Collection of five.

Not signed.

c1900 (g).

Two cylindrical Dia50 H150 on wooden base. Two as beakers on a foot Dia100 H140 and H160. One pear shaped with long neck Dia90 L340.

2301 (SORØAKAD 674). Fire syringe.
Two.

Not signed.

c1860 (g).

(a) Brass tube Dia11 L108, piston with two leather discs and a clip for tinder. Boxwood knob on the piston. (b) Brass tube Dia13 L230, steel piston rod L180, cast iron handle. At the end of the tube is a small chamber which can be opened and which contains the tinder.

2302 (SORØAKAD 676). Tinderbox.

Signed: A.D.P.S. 1821

1821.

Rough cut wooden box 320x100x90 with two compartments, one with lid, for flint and tinder.

2303 (HAUCHCOL 2012, AWH M9).

Geometrical figures.

c1800 (g).

Wooden case 330x205x70 with five trays 280x185 made of paste board with cut-outs for circles and polygons.

Very dilapidated label in the lid: "....lechanische & co....."

2304 (SORØAKAD 623). Calorimeter.

Regnault's.

Signed, stamp in the outer pail:

E.DUCRETET / PARIS

Signed under the base: 6845.25

Late 19th century (g).

Mahogany base 220x185 with brass upright and adjustable bracket for supporting thermometer. Brass cylindrical pail Dia130 H130 with wooden lid Dia150. Ebonite pegs can be inserted to keep space to inner pail.

2305 (HAUCHCOL 151, AWH C25).

Balance. Hydrostatic.

Not signed.

c1800 (g).

Brass. Triangular base, side L300 with three screw feet. Three S-shaped braces support a second triangular brass plate on which is mounted a vertical support made of brass plate. Steel beam L650 can be lifted and lowered by a rack and pinion mechanism in the vertical support. A second rack on the opposite side has a sprung clip fastening. Open-work scroll at the top with graduated scale. Overall H750. Very much like Inv no 194 in Musée d'histoire des sciences in Geneva, which is signed by Dumotiez Frères, Paris.

2306 (SORØAKAD 416). Savart's

machine for determining frequency.

c1860 (g).

Wooden frame made of 105x60 cross section painted wood. L2850 W350 H890 on four feet. Drive wheel Dia1400, six-spoked cast iron, with crank. This hand operated drive wheel has a belt drive to another axle Dia55 with four toothed brass wheels, Dia320. Tension of the belt can be adjusted by moving the bracket supporting the secondary axle. The toothed wheels can be substituted by a single rotatable wooden bar L630 or a pulley Dia300 on a steel axle. Rotation counter is missing. Made by Julius Nissen, Copenhagen. (inf).

2307 (SORØAKAD 425). Organ model.

Not signed

c1860 (g).

Wood. Housing for bellows 820x-

440x900. Pedal and handle to operate the bellows. Wind chamber 700x130x110, opening to the front by air-tight (felt gasket) wooden panel. Eight wooden pipes (one octave). Air valves operated by wooden levers from keyboard. Wooden cover with lock. Probably made by Julius Nissen, Copenhagen.

2308 (HAUCHCOL 653).

Steam engine. Model.

Not signed.

c1800 (g).

Watt's low pressure with condenser. Brass cylinder Dia85 H160. Slide valve, feed water pump. Cast iron fly wheel with rim of lead Dia480. Mahogany frame 680x300x640 including four pillars, turned to resemble classical columns Dia40 H460.

Restored 1986 by Søren Andersen, Virket.

2309 (SORØAKAD 421).

Savart's bell.

Not signed.

Mid 19th century (g).

Hexagonal wooden base 250 mm across. A baluster turned pillar H130 supports a bell metal bowl Dia210 H70. At the side is a pasteboard tube Dia115 L270 on slant, with a tube inside in order to vary the length with the purpose of obtaining resonance with the brass bowl, when it is struck. The tube is mounted on a turned wooden pillar on a wooden board sliding in a dove tail groove in the hexagonal base. Overall H330 L650 W285. Felix Savart 1791-1841.

2310 (HAUCHCOL 493). Camera obscura.

Not signed.

c1800 (g).

Mahogany 850x410x150 when folded into a portable case. H750 when opened. Base 850x410 with opening for hands when sketching. Shaped opening for viewing. Pyramid shaped upper part with lens and 45° mirror reflecting the landscape to the bottom of the instrument.

Ref: Il Museo di Fisica 8/VII by Giorgio Dragoni describes an identical instrument on page 146 and ascribes it to George Adams.

2311 (SORØAKAD 502).

Daguerreotype camera.

Not signed.

c1870 (g)

Mahogany 150x110x125. Inset cassette with photo plate and opaque glass for focusing. Objective missing. Five original photographs on glass.

Louis Daguerre (1789-1851) invented daguerrotype 1838.

2312 (HAUCHCOL 552). Telescope.

Refracting. 'Comet finder'.

Not signed.

c1800 (g).

Wooden tube Dia80 L700. Objective Dia80. Eye piece Dia50. No focusing. Shade Dia220 around the eye piece. Wooden base Dia270 with wooden pillar Dia100-65 H350. U-shaped bearing support the telescope tube in brass fitting. Overall H700.

2313 (SORØAKAD 551). Theodolite.

Signed: Professor E. Jünger's / Mechanisk Etablissement / 37 Dosseringen langs Sortedamssø 37 / nærmest Nørrebro / København

Label in the box door: Emil Olsens

lith. Inst.

c1865 (fl).

Brass. Tripod with three screw level feet. Covered azimuth scale Dia140, with two opposite windows. Scale 0-360° in 15 min divisions with two verniers to 0.5 min. Silvered altitude scale 0-360° in 0.5° divisions. Vernier to 1 min. No magnifiers. Compass Dia90 with silvered scale 0-360° in 1° divisions. Crossed spirit levels. Overhead spirit level. Fitted mahogany box 215x210x340.

2314 (HAUCHCOL 568). Tellurium. Signed on the earth globe: "Ernst Schotte, Berlin".

c1800, except the earth globe, which is later.

Turned wooden foot Dia370 on three spherical feet Dia45. Spiral turned wooden pillar Dia45-35 H720. Rotatable top Dia125 H50 with two grooves for cords and attached paper with signs of the zodiac and two scales of dates. Candle stick with concave brass mirror. Earth globe on spiral turned wooden arm L550. On rotating this arm around the sun, the earth will rotate around its axis and the moon will rotate around the earth. Angles of equator and moons orbit with the ecliptic seem correct.

2315 (HAUCHCOL 798). Leyden jar batteries. Four.

Not signed.

c1800 (g).

Mahogany cases 875x530x550 on four feet H230. 15 glass jars Dia160 H280, connected in parallel by brass conductors Dia14 to the inside of the jars. All jars stand on tin foil at the bottom of the mahogany case.

2316 (KORTSTYR). Measures.

Length. Two.

Signed: G.W.KLEIN KJØBENHAVN.

c1900 (g).

Probably German silver. Mounted together in mahogany plate. (a) Inches, decimal. Graduated 0-320 dec inch. L1110 with L1006 between 0 and 320. Marked: "Decm. Tomé / 18°. G.W. KLEIN / KJØBENHAVN". (b) 1 meter at 18°C. Graduated 0-200.

2317 (KORTSTYR). Measures.

Length. Three.

Signed: G.W.KLEIN.

c1900 (g).

Probably German silver. Mounted together in mahogany plate. (a) Three feet divided in decimal inches. L1000 W50. Signed "ADRIAN 1880". (b) L700 W35. Graduated 0-6.4 in 0.01 divisions. Marked 6500/20.000 Toise. (c) L690 W35. Graduated 0-2 feet in decimal inches. Transversals.

2318 (KORTSTYR). Alidade for plane table. Telescopic.

Signed: G.W.KLEIN / KJØBENHAVN

c1900 (g).

520x50x9. Chamfered edges. Crossed spirit levels. Three level adjusting screws at one end of the ruler. Telescope brass Dia36 L325. Objective Dia28 with dust cap. Eye piece Dia28 with rack and pinion focus. Silvered altitude scale Dia150, graduated 0-90-0-90° in 0.5° divisions. Vernier to 1 min. Two opposite verniers with magnifiers.

2319 (KORTSTYR).

Theodolite, simple.

Signed: Ertel in München

c1900 (g).

Brass. Tribrach, adjustable feet with clamps. Silvered azimuth scale Dia165. 0-360° in 1/6° divisions. Vernier to 10 sec. Two opposite verniers. Magnifiers. U-bracket has bearings for a steel axle L165 with excentrically mounted telescope Dia24 L250. Counterpoise. Striding spirit level.

2320 (KORTSTYR). Slide rule.

Not signed.

c1900 (g).

Wood with bone (ivory) scales. 545x40. Scales for tang and sin, 45° to 3.5 min. Also cm scale and reduction scale 1:25. Metal Box, probably tinned sheet iron L535 in leather bag.

2321 (KORTSTYR). Alidade for plane table. 'Universaldioptr M1932'.

Not signed.

1932.

Brass. Green painted open rule with bubble level. U-bracket for telescope bearing. Telescope Dia45 L345. Focus by adjusting the objective, rack and pinion. This instrument was specifically made by the Geodætisk Institut own workshop for surveying in South Jutland during the 1930s. Geodætisk Institut was the predecessor of today's Kort & Matrikel Styrelsen.

2322 (KORTSTYR). Scale rules.

Three.

Brass. Small extension with hole for suspension.

Second half 19th century.

(a) L960 W65. Scale 1:15000, 0-12 divided in decimals. Each unit about 67 mm. Transversals. Not signed.

(b) L950 W43. Scale 0-3 feet divided in decimals. Marked "ved 18°R". 1

foot=314mm. Transversals. Signed: E.JÜNGER KJØBENHAVN.

(c) L1000 W50. Scale 0-3 feet. Divided in decimals. Transversals. Signed: ADRIAN 1880.

(d) Measure. Scale 20-0-20 inches in decimals. Not signed.

2323 (KORTSTYR). Alidade for plane table. Telescopic.

Not signed (probably made by Geodætisk Institut's own workshop).

Late 19th century (g)

Brass. 525x50x6. Two screws for level adjustment. Telescope Dia28 L340. Objective Dia30. Eye piece Dia20. Rack and pinion focusing. Two spirit levels (on rule and telescope). Altitude adjustment by brass arc with two silver inlaid scales (a) 8-4-0-4-8 with six divisions per unit; (b) 27-0-27 with one division per unit. Magnifier. Note: "0" on scale 'a' corresponds to "12" (below the zero) on scale 'b'. There are two indices, single line index on scale 'b' and vernier +/-10 on scale 'a'. Both zeros coincide because the two indices are offset.

2324 (KORTSTYR). Theodolite.

Alt-azimuth instrument.

Signed on the horizontal circle: Gambey á Paris

Mid 19th century (g).

Brass. Tribrach with screw level feet. Mounted on a collar on the central pillar is a telescope Dia32 L300. This can be clamped to a horizontal scale wheel in which an inner ring with index and vernier can slide. Scale Dia225 graduated 0-360° in 5 min divisions. Vernier to 5 sec. Above this is the altitude scale mounted eccentrically and with counterpoise. Scale Dia220 0-360° in 5 min divisions, verni-

er to 5 sec. Telescope Dia32 L300. Push fit focusing with prism for reading. Dust cover for both objectives. Overall H380.

2325 (KORTSTYR). Circle. Universal surveying.

Not signed. (Allegedly made by Johan Ahl to Thomas Bugge's specifications). c1790 (g).

Brass. Circular base Dia175 on spherical brass support with six screws for level adjustment. Upon this is a brass pillar Dia50 H100 on which a heavy (15 mm thick) bracket can be rotated and clamped in position. The circle can be mounted on this bracket in two pairs of notches, secured by wing nuts, giving it horizontal or vertical position. Two telescopes, one horizontal Dia24 L630, objective with push fit focusing and red filter at the eyepiece. Fine adjustment for horizontal, spirit level below. The other telescope similar, but red filter missing. Scale Dia450, graduated 0-90-0-90° (0 horizontal) in 20 min divisions, vernier to 1 min; clamp and tangential screw. Overall H600.

Very much like "Ekström's Circle", but modified by Thomas Bugge, described 1779. This instrument, however, only has one scale, while Bugges description also has a scale 0-96 together with 0-90 for the right angle.

2326 (KORTSTYR). Alidade for plane table. Telescopic.

Signed: Raeffle in Berne
c1900 (g).

Brass. 550x55. One edge chamfered. A-frame supports the telescope Dia26 L320. Pinhole and wire sights above. Index arm pointing down on semicircular scale Dia75 graduated 44-0-44° in 15 min divisions. Vernier to 1 min.

2327 (KORTSTYR).

Theodolite, simple.

Signed O.SUNDBY

c1900 (g).

Brass. Tribrach. Adjustable screw feet. Horizontal scale Dia130 graduated 0-360° in 30 min divisions; two opposite verniers to 1 min. Spirit level gone. Vertical adjustment of the telescope, 0-50 units on a scale L26 which is 180 mm from the hinged end of the telescope support. Micrometer screw with 100 units per rotation. Telescope Dia45-28, maximum at objective end. Spirit level above. Objective Dia40; dust cap missing. Eyepiece with rack and pinion focusing. Pinhole sight at the side of the telescope tube.

2328 (KORTSTYR). Theodolite.

Transit.

Signed: Reichenbach in München
Early 19th century (g).

Brass. Tribrach with screw level feet. Pillar Dia75-45 H135 with brass block 92x47x48 on which is mounted a telescope Dia28-26 L285; eyepiece Dia18, rack and pinion focus. Objective Dia30 with dust cap. A brass six spoked horizontal brass circle can be clamped to the telescope. The circle has scale 0-360° with vernier. Graduation is illegible. In this slides another ring with index and vernier and supporting two A-frames with a reversible telescope Dia28-25 L290.

2329 (KORTSTYR).

Theodolite, simple.

Signed: JULIUS WANSCHAFF /
BERLIN

c1900 (g).

Brass. Ring base with three adjustable

screw feet. Horizontal ring Dia270 with scale graduated in brass 0-360° in 1° divisions; also silvered scale 0-360° in 5 min divisions. Telescope reading. Clamp and tangential screw. Central pillar Dia65-50 H130 with telescope mounted in U-frame of black lacquered brass. Telescope Dia55 L550; eyepiece with rack and pinion focus. Overall H500.

2330 (KORTSTYR). Alidade for plane table. Telescopic.

Not signed.

c1900 (g).

Brass. L518 W35-20. One chamfered edge. Telescope Dia38 L500 mounted on brass pillar; sector with scale 40-0-40° in 15 min divisions. No magnifier. The sector is racked and operated by worm gear which can be disengaged by a small handle.

2331 (KORTSTYR). Theodolite.

Transit.

Signed: V. FALCK RASMUSSEN

KJØBENHAVN

c1900 (g).

Brass. Tribrach with screw level feet. Six spoked horizontal brass ring Dia175 with scale 0-360° in 1° divisions and silver inlaid scale in 10 min divisions with telescope reading and micrometer on the telescope, graduated 0-5 in 1/12 units. U-frame supporting the telescope axle. Telescope Dia28 L300; rack and pinion focus. Scale 0-360° in 1° divisions. Vernier illegible. Magnifier with prism. Striding spirit level. Overall H310.

2332 (KORTSTYR).

Douglas reflecting protractor.

Signed: Prof Smith's Etablm i Kiöbenhavn

Mid 19th century (g).

Brass. Ruler with transversals 130x25.

Upon this is a semicircle Dia100 graduated 0-130° in 30 min divisions. A 60° sector is rotatable along the circle; vernier to 1 min. An index arm has a long slot in which a knob on the rotatable sector is displaced so as to rotate the sector when adjusting the index arm during sighting through a pinhole. Fitted mahogany box 165x110x45, marked "IC/16".

2333 (KORTSTYR). Theodolite, plain.

Signed: Adams London

c1790 (g)

Brass. Circular base plates Dia95 with four level screws. Central pillar with telescope Dia27 L220; objective Dia28 with push fit dust cap. Horizontal scale 0-360° in 30 min divisions; vernier to 1/100 marked "Tangt to 100 of Radius"; rotated by operating a knurled knob. Crossed spirit levels. Two A-frames support the axle for the altitude telescope, which is mounted on a semicircle Dia165 with scale graduated 0-90° and 0-50. This has racked edge and is operated by a pinion with a knurled knob. Telescope Dia30 L250; spirit level below.

2334 (KORTSTYR). Surveyer's level.

Signed: E. JÜNGER. KIÖBENHAVN

No 8

c1860 (fl).

Brass. Cone with clamp for staff mounting. Circular levelling plate supported by two springs and one level screw. Brass supporting bracket hinged

at one end and with a micrometer at the other. A vernier is attached to the bracket indexing on a scale in the base plate below. Spirit level. Clamp and tangential screw. Silvered scale 0-360° in 30 min divisions; vernier. Telescope Dia35-27 L430; eyepiece with rack and pinion focus. Fitted wooden box 475x270x170.

2335 (KORTSTYR). Moon globe.
Signed: A / ??? / representing the /
VISIBLE SURFACE of the MOON /
constructed from / TRIANGLES mea-
sured with a MICROMETER / and
accurately drawn & engraved / from a
long series of / TELESCOPIC OBSER-
VATIONS / by I.Russe / R.A.
HIS MAJESTY'S LETTERS PATENT /
This Globe / being part of the APPA-
RATUS named the / SELENOGRAP-
HIA / designed to exhibit the Lunar
Libration Etc / is published by the Aut-
hor, Newman St / London June 14th
1797.
1797.

Metal with paper gores; Dia310. 12
gores and two polar caps. Seven gores
are decorated, five are blank. Turned
wooden base Dia240. Wooden baluster-
turned pillar H100.

2336 (KORTSTYR). Barometer.
Fortin's.
Signed: Pistor & Martins / BERLIN /
Nr 671
c1870 (g).

Brass. Cistern Dia40 H120. Zeroing
screw below. Brass tube H840 to the
point of suspension. Thermometer 30-
0-40° Reaumur and 30-0-120° Fahren-
heit. Silvered scale 170-310 Paris Lig-
nes. Vernier. Mahogany tripod, folding

around the barometer for transport.
Overall H1150.

2337 (BOHLHOLM 3685:84). Sector.
Signed: ANNO 1769
1769.

For determining the weight of cannon
balls according to material and diame-
ter. Boxwood with brass fittings. Each
leg 235x29x7. Scales for "R.Krud",
"C.Krud", "Bly", "Steen", "N.W.Calib",
"K.W.Kugle", "Bombers D", "Mørse
cal", etc.

2338 (BOHLHOLM 3688:84). Sector.
Not signed.
c1780 (g).

For determining the weight of a can-
non ball according to material and dia-
meter. Boxwood with brass fittings.
Each leg 236x30x8. Scales marked
"Steen", "R.Metal", "G.Iern", "G.Cali-
ber", "R.Blye", "Granat", "R.Krud",
"Wisker K", "Cardus D" etc.

2339 (BOHLHOLM 3687:84).
Measure. Length.
Not signed.
Mid 18th century (g).
Brass. For determining weight of can-
non balls. 370x27x8. Hole at one end
for hanging up. Scales marked "N.Iern"
(1L-64P), "G.Iern" (1L-64P), "Bomb.
Diamet." (1/8-150 (no units)). Marked
on the other side "N.Cali" (1/8-64),
"G.-Cali" (1/8-64), "Mørse Calib" (1/8-
150).

2340 (BOHLHOLM 3689:84).
Quadrant. Artillery, axe type.
Signed: D.Kaysser Friedrics-Werck /
1767
1767.

Brass head and steel rod. Overall L1085, cross section of steel rod 18x18. Brass head pierced with scale 50-0-50° in 1° divisions. Plumb bob. The quadrant is protected on both sides by glazed brass doors 220x200.

2341 (BOHLHOLM 3698:84).

Measure. Calibre.

Not signed.

Mid 18th century (g).

Three steel feet Dia14 L40 mounted with set screws in brass collars, which slide on three brass arms forming a T. The brass arms L170 and cross section 13x13 are graduated 1 - 6.

2342 (BOHLHOLM 3692:84).

Caliper gauge.

Signed: "MAGDE" and small flower.

Mid 18th century (g).

Brass. L427, cross section 21x5. Scale 0-15 inches, divided in decimals; vernier to 1/100 inch, clamping screw. Steel jaws, diamond shaped cross section L38.

2343 (BOHLHOLM 3693:84).

Caliper gauge.

Signed: "1869 SMITH" (Jeppe Smith's successor Japetus Emilius Albrecht Hansen).

1869.

Steel with brass adjustable jaw. L850 cross section 26x6, jaw L410 cross section 16x8. Brass jaw with vernier, clamp and fine adjustment screw. Scales 0-25 (no units) (0-25=326 mm). and 0-25.5 Tommer. Vernier to 1/144 inch.

2344 (BOHLHOLM 3691:84). Sliding caliper.

Not signed.

c1910 (g). The instrument seems older, but the meter system was introduced by law in 1907.

Boxwood bar L1045 cross section 45x12 with scale 0-94 cm, divided in mm. On reverse side scale 0-36 Tommer (Danish inches) divided in 1/12. Mahogany jaws L310 W50-15 in brass fittings.

2345 (BOHLHOLM 30110-25).

Caliper.

Not signed.

Second half 19th century (g).

Steel. Ruler 330x33x6 with jaw at one end L100. Sliding jaw with clamping screw L100. The jaws are curved pointing towards each other. No scales, indicating that the instrument was probably either unfinished or intended for comparisons only.

2346 (BOHLHOLM 3699:84).

Quadrant.

Signed: Prof Smiths Etablm / Kjöbenhavn

c1820 (g).

Brass. Base L485 cross section T-shape 52x29 in 6 mm thick brass. Four screw level feet. Quadrant arc Dia160 with silvered scale -10 to 105° in 20 min divisions. Index arm with vernier to 1 min. Clamp and tangential screw. Spirit level on the index arm. Overall H205.

2347 (BOHLHOLM 3700:84).

Clinometer.

Not signed.

Second half 19th century (g).

Magogany plate shaped as a rightangled triangle 340x250, brass pendulum with hemispherical weight and brass fittings. Scale of inlay brass 45-0-45° with six divisions per 10°.

2348 (BOHLHOLM 3696:84).

Quadrant.

Signed: A & R Hahn / Cassel

1884 (inf).

Rightangled brass triangle, sides L110 with edges on which the instrument can stand. Hinged at one of the acute angles is a spirit level, acting as index arm. Adjusted by finger screw pinion and racked arc Rad80. Silvered scale 0-55° in 0.5° divisions. Vernier to 10 min. Listed as 'artillery tool'.

2349 (BOHLHOLM 3713:84).

Anchoring place calculator.

Signed: CORNELIUS KNUDSEN / KJØBENHAVN

Late 19th century (g).

Instrument for calculating the anchoring position. Two compass roses Dia40 connected by a steel bar L180. Two other steel bars are each hinged at one end in each of the roses and interconnected by a movable joining fitting so that a triangle with a fixed base line and variable sides and base line angles is formed. A second shorter is also hinged at the centre of one compass rose. Wooden box with instructions 605x130. Invented by Capt. F. Lund.

2350 (BOHLHOLM 3711:84).

Protractor. Brass.

Not signed.

Mid 19th century (g).

Semicircle Dia315. Brass scale -5 to 90° to 5° in 20 min divisions. The brass index arm has vernier to 1 min.

2351 (BOHLHOLM 3709:84).

Angle measuring.

Signed: Troughton & Simms London c1880 (g).

Brass. For measuring the visible horizon by sighting the front and the rear horizon at the same time. On a L200 brass bar is mounted a brass handle and a sighting tube Dia22 L110 with a single lens and an angled half silvered mirror. A L210 alidade has a fully silvered mirror at the fulcrum reflecting to the other mirror. A scale -5 to 15° in 20 min divisions has vernier to 20 sec.

2352 (BOHLHOLM 60130/22).

Station pointer.

Signed: L. Kirkeby / København

c1860 (g).

Brass. One fixed leg at 0°. Two movable legs with verniers and clamp screws. Circular scale Dia200 through a 280° arc graduated 140-0-140° in 0.5° divisions, verniers to 5 min. The legs L255, cross section 9x2.

2353 (BOHLHOLM 3835:84).

Station pointer.

Signed: SMITH / 1884

1884.

Brass ring, steel legs. Ring with four spokes Dia160. Legs L675, cross section 16x4; one edge chamfered. Brass scale 0-180-0° in 0.5° divisions, vernier to 1 min. Clamping screws.

2354 (BOHLHOLM 3834:84).

Station pointer.

Not signed.

Late 19th century (g).

Brass ring, steel legs. Ring with five spokes Dia220. The legs have T-cross section 17x14; one edge chamfered. Brass scale 180-0-180° in 0.5° divisions; vernier to 1 min; clamping screw. Marked "Søkaart Arkivet".

2355 (BOHLHOLM 3704:84).

Reflecting circle.

Signed: Pistor & Schiek BERLIN / No 227 / Die Verglasung von Fraunhofer.

c1825 (g).

Brass. Six-spoked ring, Dia320. Silvered scale 50-0-50° in 20 min divisions; two opposite verniers to 20 sec. Magnifier, clamp and tangential screw. Telescope Dia32 L280; eye piece Dia20, Huyghen's ocular. Objective Dia31; no focusing. Fruitwood handle.

2356 (BOHLHOLM 3710:84).

Protractor.

Signed: SMITH

Mid 19th century (g).

Brass. Semicircle Dia375. Brass scale 5-90-185° / 185-90-5° in 20 min divisions. Zero line (base diameter) marked by three circular glass windows with cross-lines. The alidade is a sector-shaped frame with a radial extension as ruler, L85; vernier to 30 sec, magnifier; clamp and tangential screw. Overall dimension 380x330. Marked "Det kongelige Søkaart Archiv Nr 2".

2357 (BOHLHOLM 3715:84).

Measure. Length.

Not signed.

Mid 19th century (g).

Steel band W19 with two brass handles. Marked with brass tags at every 5 feet, last tag marked "45". Total length 50 feet. Each tag is individually shaped, cut in characteristic polygons.

2358 (SØOPMAAL). Heliostat.

Brass. Base frame with three levelling screws. Rectangular adjustable mirrors. Needs further examination.

2359 omitted

2360 (BOHLHOLM 60130/32)

Chain, surveyor's. Iron.

Not signed.

19th century (g).

2361 (BOHLHOLM 3810:84).

Barometer. Marine, cistern type.

Signed: Prof. Smith's Etabl / i Kiøbenhavn

c1830 (g).

Turned walnut Dia30; cistern Dia90 H110. Turned finial with sphere. Brass wall bracket with sprung and gimballed suspension. Scale L150 graduated 25 9/12 inch to 30 2/12 inch with vernier to 1/144. Text in Danish; "Foranderligt" (Change) at 28. Marked "Søe Milit Arch / Selskab No 8".

2362 (BOHLHOLM 60140/2).

Chronometer. Marine.

Signed on the dial: Kessels Altona / 1330

Trade label: Carl Ranch / Chronometer Maker / to the Royal Navy / COPENHAGEN / Østergade 27, Corner of Kjøbmagergade.

On the trade label is written dates for servicing:

1863,67,72,78,83,89,92,97,1902,07.

1860 (written on trade label).

Mahogany case 125x125x120. Circular glass panel in the lid; lock and key. Clock Dia70 H43 brass case; gimbals with bolt. Silvered dial with Roman numerals; seconds dial with arabic numerals. No winding dial.

2363 (BOHLHOLM 60130/35).

Reflecting circle.

Signed on alidade spoke: C.H.Pistor BERLIN / No 57.

Trade label: Lauritz Kirkeby / Willum

Petersens Efterfølger / ??? Marines Instrumentmager / Etableret 1841 / Laxegade 26 Kjøbenhavn. HJ.af Skvaldergade.

Early to mid 19th century (g).

Five-spoked brass ring Dia210 with scale -10 to 160° in 20 min divisions. Brass ring with three flat spokes as alidade; vernier to 1 min, clamp and tangential screw. Mirrors with filters. Telescope Dia20 L140. Marked "Sökort Arkivet". Fitted mahogany box 270x260x130.

2364 (BOHLHOLM 3722:84).

Quadrant.

Not signed.

c1800 (g, difficult to date).

Brass. Rad174. Engraved scale 0-90° and 90-0° in 0.5° divisions (note: '80' is engraved as a horizontal "S" on both scales). The brass alidade is a 30° sector as vernier reading to 30 sec. Folding sights, slits only, two on the alidade at 0 and 30° and one at the quadrant radius. Compass Dia68; glass cover, brass dial with eight compass points; scale 0-90-0-90° in 1° divisions. Also graduation 0-12/0-12 in 1/4 divisions. Ball and socket staff mounting. Wooden box, quadrant shaped, crudely cut out.

2365 (BOHLHOLM 60130/26).

Course calculator.

Signed: G.W.LYTH STOCKHOLM / 47

Mid to late 19th century (g).

Circular brass plate Dia150 with hole for suspension and engraved along the edge 0-90-0-90° in 1° divisions; also engraved: N-NtO-NNO-NOtN-NOin 1/4 divisions. Over this plate is concentric and rotatable another brass plate, volvelle, Dia105 with the same points of

the compass, but no degree scale. This can be clamped in position to the greater plate. Between the two plates an arrow can be rotated. Marked "WEDELS PATENT".

The use of this instrument is not known.

2366 (BOHLHOLM 3743:84).

Compass, azimuth.

Not signed.

c1780 (g).

Gimbal mounted in wooden case 325x325x200. Bowl 230x220; bearing sights. Dry compass card under glass fastened with putty. Simple hand drawn card 0-90-0-90° in 1° divisions. At North is drawn the Royal monogram C7 of Christian VII. Landscape picture at the centre.

2367 (BOHLHOLM). Compass.

Not signed.

c1800 (g).

Wooden bowl 197x195x110. Brass gimbal in wooden case 300x290x170. Dry card, hand drawn. 0-90-0-90 in 1° divisions. Fleur de lys at North. Seascape picture at the centre.

2368 (BOHLHOLM 20120/9).

Range finder.

Signed: H.E.Holst's Efterfølger Kjøbenhavn

c1880 (g).

To determine the distance to an object of known height. Brass quadrant with lattice frame. Scale 1-16000 Fod (Danish feet). Half mirror for sighting the base and index mirror operated by eccentric from the index arm. No filters. Telescope Dia39-23 L125. Scale reading by magnifier. Clamp and tan-

genital screw. Marked "Fyen. Øjehøiden = 78 Fod".

2369 (HOLBMUSE). Balance. Coin scale.

Signed: Rud Koppel / Mechanicus und / Opticus / Hamburg
c1860 (g).

Brass. Beam L100. Ring bearing in galls. Brass pans Dia32 suspended in three cords. Brass galls H45. Seven brass weights marked "1 LOUIS", "20 FRANCS", "1 SOVEREIGN", "1/2 LOUIS", "2 LOUISD", "1 D DUC", "1 H DUC". Fitted case 155x66x21 covered by red imit shark skin; lined with suède.

2370 (HOLBMUSE 7574). Weights. Set of six.

Not signed.
1762.

Brass. Shaped as frustrums of pyramid. (a) "1 P", 54x54, without certification marks; (b) "1/2", 40x40, marked crowned "C5", three towers, "1762", "K"; (c) "8", 32x32, marked crowned "C5", three towers, "1762", "K"; (d) "4", 25x25, marked crowned "C5", three towers, "K"; (e) "2", 19x19, marked crowned "C5", three towers, "K"; (f) "1L" 17x17. Wooden case 220x75x37.

2371 (HOLBMUSE 23167). Weights. Complete set of eight.

Not signed.
c1900 (g).

Brass.

(a) "50 QVINT", Dia40 marked "C5"; (b) "20 QVINT", Dia30 marked "C5", two; (c) "10 QVINT", Dia25 marked "C5", three towers, "1900"; (d) "5 QVINT", Dia20, marked "C5", three towers; (e) "2 QVINT", Dia14, marked "C5", three towers, two;

(f) "1 QVINT", Dia11, marked "C5", three towers.

Fitted beechwood box 170x85x40.

2372 (HOLBMUSE 5104). Balance stand.

Not signed.
c1920 (g).

Cast iron. Three apothecary's balances. Stand base 120x120 with relief lion's heads. Fluted pillar H600. Upon this is a brass cylinder Dia35 H180 with three curved brass arms for suspending balances. Brass sphere finial. Overall H765. From the Elephant Pharmacy in Holbæk. Three balances, equal arm type, brass with horn pans.

2373 (HOLBMUSE 9512). Pipette. Not signed.

19th century (g).

Glass. Probably for distilled spirits. Pear shaped, pointed opening below and pierced knob above for covering with the thumb. Glass handle at the side. L580 maximum Dia80.

2374 (HOLBMUSE 7592). Phonograph.

Signed, gold paint on the black iron base: Dansk Fonograf Magasin / København
c1900 (g).

Oak base 280x190. Upon this is a black laquered cast iron base plate 195x110 with spring clockwork, centrifugal regulator with three spheres, pickup missing, pink and gold painted cone tube. Overall H400.

2375 (HOLBMUSE 16878). Ear trumpet.

Signed: CAMILLUS NYROP /
GRUNDLAGT 1838 / KJØBENHAVN
Second half 19th century (g).
Black painted sheet iron. Oval funnel
90x60 L80. Inserted in the funnel is a
cone with the point outwards and the
wide end at the bottom of the funnel.
Conical ear tube from the funnel and
curved in a right angle.

2376 (HOLBMUSE). Ear trumpet.
Not signed.
Second half 19th century (g).
Brass. Circular rounded conical funnel
with openwork lattice in the opening.
The ear tube soldered to the funnel
parallel to the axis, and continued insi-
de to the bottom of the funnel. Overall
L185.

2377 (HOLBMUSE 9268a).
Telescope. Refracting.
Signed: F.Walker / London / Day or
Night
c1860 (g).
Three-draw. Brass with wooden outer
tube Dia60 L150. Brass sleeve at objecti-
ve end L110. Dust cover with sliding
shutter. Erecting lens. Eyepiece Dia35
with dust cover. Push fit focusing.
Defective.

2378 (HOLBMUSE 4738). Telescope.
Refracting.
Signed: Heilbuth. Limehouse. London
/ Day or Night
c1860 (g).
One draw. Brass with wooden outer
tube Dia56 L310. Brass sleeve at objecti-
ve end L115, dust cover with sliding
shutter. Draw tube Dia45 L400. Erec-
ting lens.

2379 (HOLBMUSE 136). Sandglass.
Not signed.
Mid 19th century (g).
Octagonal wooden bases 130 across
H250. Five wooden pillars. The glass
placed in veneer rings. Two glasses
Dia80 joined by the necks, but the
thong is gone. Likely 1/2 hour glass.

2380 (HOLBMUSE 6247). Magnifier.
Reading apparatus.
Not signed. But marked with an
impression of a stylized sun.
c1900 (g).
Three wooden cases 215x140 hinged,
the upper two at one end, the lower two
at the opposite end. Height of each case
25 mm. The upper case has a Dia100 bi-
convex lens mounted in black lacque-
red circular frame. The middle case has
at the end opposite the hinge a holder
for picture, text etc. This can be displa-
ced for focusing. The lower case is hin-
ged to the middle case for adjusting to
convenient reading position when the
apparatus is placed on a table.

2381 (HOLBMUSE 3471).
Thermometer.
Not signed.
Late 19th century (g).
Red spirit in glass. L285. Metal scale -10
to 70° Reaumur nailed on slant in woo-
den frame - rather primitive. Handle
roughly carved with hole for hanging
up. Probably domestic industry.

2382 (HOLBMUSE 8687).
Barometer. Cistern type.
Not signed.
Second half 19th century (g).
Conifer, with curved sides. H900, maxi-
mum W90. Scale 125x80, paper under

glass, headed "BAROMETRUM" with Danish text. "Foranderligt" (change) at 28 inch.

2383 (HOLBMUSE 6442).

Chondrometer.

Signed: F.A. THIELE /

KIÖBENHAVN / 293

c1900 (g).

Brass. Cylinder Dia100 H135, lid H50. Funnel Dia115-70 H158, pivoting lid with lock. Wooden striker for leveling measured amount of grain. Brass balance with box ends, beam L210; gallows with circular opening for viewing index pointer at equilibrium. Weights in wooden box 83x80x52, four cylindrical brass marked 10, 20, 40, 60, and six square marked 1/2, 1, 2,, 3, 4, 5. Wooden box 280x220x150.

2384 (HOLBMUSE 2300).

Barometer. Cistern type.

Not signed

Late 19th century (g).

Wood L960, maximum W105. Turned fruitwood cistern cover. Roof shaped pediment. Paper scale under glass 95x160 with text in Danish.

2385 (HOLBMUSE 8827).

Gun powder proofer.

Not signed.

Second half 18th century (g).

Iron bar with wooden handle overall L300. Iron cylinder with brass lining, size of a thimble, to be filled with the gun powder. A lid is connected to a ratchet wheel with the teeth numbered 0-40. On firing, as a pistol, the lid is pushed upwards, turning the wheel a number of teeth, according to the firing power. Dimension 300x55x90.

2386 (SORØAMTS 2836). Sandglass.

Likely 1/2 hour.

Not signed.

Mid 19th century (g).

Octagonal oak bases, 98 mm across. Four wooden pillars H195. Veneer rings at top and bottom holding the glasses. Two separate glasses joined at the flanged necks by twine. Overall H220.

2387 (SORØAMTS 201:1986).

Magnifier. Pocket microscope.

Not signed.

c1900 (g).

Double lens (Huyghen's ocular). Dia28. Brass screw barrel fitting L25 in brass ring on three brass legs L28. Probably used for examining grain.

2388 (SORØAMTS 228:1987x).

Barometer. Stick.

Signed: AXEL HÖYER

Late 19th century (g).

Mahogany H980. Roof shaped pediment, cylindrical mahogany cistern cover. Paper scale under glass 85x145, graduated 26-30 Danish inches in 1/12 divisions. Danish text.

2389 (SORØAMTS 128x1985x1).

Weight.

Not signed.

1839 (g).

Bronze. Dia55 H70 excluding neck with hole, probably used with a steel-yard. Marked "K" on each side of the neck, "1740", "1839". Weighs 1.6 kg. No weight stated. Rattles, contains core.

2390 (SORØAMTS). Weight.

Not signed.

Early 19th century (g).

Bronze. Dia85-70 H110 excluding neck with hole. No weight stated, but weighs 5 kg. Marked with three towers and "F6". Probably used with steel-yard.

2391 (NYKØSJM U N542, D25b).

Sandglass.

Not signed.

Mid 19th century (g).

Wooden octagonal base and top 160mm across. Painted red, silver and black, with a six-pointed star at top and bottom. Five wooden pillars. Overall H270. Glass in two parts Dia105 joined at the flanged necks by twine. Five cords, joined above and below the instrument, allows it to be suspended either end up.

2392 (NYKØSJM U H874, A5).

Barometer. Bulb cistern.

Signed: Carl Nielsen / Kjöbenhavn

Late 19th century (g).

Mahogany. H925, maximum W105, roof shaped pediment. Rectangular cistern cover. Scale 90x140, paper under glass, 26 to 29 8/12 inches in 1/12 inch divisions. Danish text.

2393 (NYKØSJM U N1096, A5).

Barometer. Bulb cistern.

Not signed.

Mid 19th century (g).

Softwood H1000 W120. Round pediment. Rectangular cistern case with sliding cover. Scale 90x120, paper under glass, 26 6/12 to 29 4/12 inches in 1/12 inch divisions. "Ustadigt" (changeable) at 28 inch. Note: the divisions are numbered 4 and 8 (i.e. 4/12 and 8/12) up and down from 28 inches.

2394 (NYKØSJM U). Measures.

19th century (g).

Length: Collection of about 20 different wooden alen (ell) sticks.

Volume: Collection of five different pewter cups.

2395 (NYKØSJM U 695, G4b).

Measure. Volume.

Bronze. Ext Dia98. Int Dia82. Ext

H197. Int H193.

Marked on the side: "C5 1684" (engraved with foliage).

Marked on the edge: "C5 M" (impressions).

This is one of the original certified measures, sent from 'Probeer Contoret' headed by Ole Rømer after the weight and measures reform in 1684. It came to the museum from the town council in 1912.

2396 (ODSHHØVE H948).

Barometer. Cistern type.

Not signed.

Late 19th century (g).

Wood H910, maximum W95, minimum W38, roof shaped pediment. Paper scale under glass 82x137, 26 6/12 to 29 4/12 inch; "Foranderligt" (change) at 28 inch. Danish text. The glass tube probably new.

2397 (STENSTRP 454). Sandglass.

Four hours.

Not signed.

Second half 19th century (g).

Wooden frame, painted red-brown, octagonal bases 195 mm across. Six carved pillars, veneer rings round the glass bulbs. Overall H350. Two glass bulbs joined at the flanged necks by twine.

Comes from a farm, allegedly used by the housewife to time the meals.

2398 (STENSTRP). Wheelwright instruments.

Not signed.

Late 19th century (g).

(a) slide gauge, wood, L245, the jaws L80, scale on inlaid boxwood I to VII in units of 28mm, divided in halves of 14mm. (b) level, semicircle Dia308 with plumb bob.

2399 (STENSTRP). Sundial.

Signed: I.C.S.K. / 1709.

1709 (g).

Sandstone, 260x240x60. Semicircular dial with arabic numerals 6-12-6. Hole for the gnomon, which is missing.

2400 (STENSTRP 401, 402, 982).

Galvanic elements.

Not signed.

c1900 (g).

Copper and zinc sheets connected by porous material and held together by cord. Shaped as cross or six-pointed star and engraved with hebrew signs. Dipped in vinegar and carried as amulet-necklace. The electric quality said to cure various diseases.

2401 (STENSTRP 403, 404, 979, 980).

Galvanic elements. 'Arthritis chains'.

c1900 (g)

403: Wooden links L25 with copper and zinc wire. Total L770

Signed: I.Hoffmann, København

404: Links L30 of copper and zinc plates tied together with coloured cord. Total L1200

Signed: Reiersen & Copp. Patent.

979: Links of small pieces of wood with copper wire. Total L680.

980: same as 979, but L1500.

2402 (STENSTRP 730, 992).

Ear trumpets. Two.

Not signed.

c1900 (g).

730: Brass. Bell-shaped funnel Dia95 with tube along the side and with horn ear insert. Openwork grid at the funnel opening. Overall L200.

992: Bakelite funnel L190 with flexible connection L215 to bakelite ear insert L80.

2403 (STENSTRP 285,286,287).

Three Hydrometers. Alcohol meters.

c1900 (g).

285: Glass. Sphere with lead shots. Sphere as float. Stem with paper scale marked "Alkoholmeter efter Spendrup. T.p.9 gr R" and graduated 7-16. L235. Signed: N.H.Klint 7.

286: Glass. Glass float and weight as above. Scale 1-11.

287: Glass. Scale 0-18. Marked "Alkoholmeter efter Spendrup T.p. 9 gr R". Temperature correction scale. Thermometer with scale 5-40°R. Signed on label "N.H.Klint Gradestok"

2404 (STENSTRP 72, F865x1).

Barometer. Stick.

Signed: Hans Johansen / Lemming pr Silkeborg

Second half 19th century (g).

Wood painted to resemble mahogany. L955, maximum W105. Paper scale under glass 90x135, 26 6/12 to 29 7/12 inch. Text in Danish. "Foranderligt" (change) at 28 inch.

2405 (STENGYMN). Voltage divider.

Signed: N.C.JENSEN / KØBENHAVN / No 2406

c1940 (g).

Oak case 300x110x175 with ceramic reddish cover. Terminals for accumulator and output. Two rotary brass contacts marked 0 to 17 x 100 Ω . Resistance wires are wound on ebonite reels and lacquered black.

2406 (STENGYMN). Potentiometer.
Signed: N.C.JENSEN / KØBENHAVN
c1940 (g).

Oak case 175x215x60 with ceramic reddish cover. Terminals marked "0-0.02 VOLT" AND "4 VOLT AKK". Also marked "POTENTIOMETER". Adjusting dial Dial100 with scale 0 to 12 in 0.1 divisions.

2407 (STENGYMN). X-ray tube.
Signed: ELEKTROMEKANO A/S /
COPENHAGEN DENMARK / TYPE R
No 18 / Fil 4 V 2,95 A.
c1950 (g).

Fixed electrodes. Anode of thin plate (material?) on slant. No anticathode. Four connection pins in socket; at the other end single terminal on metal cap with screw and serrated nut.

2408 (STENGYMN). Electrometers.
Two.
Signed: "FYSIK"

(a) Amperemeter. Wooden base 100x105. Black desk shaped ebonite case 80x70x55. Moving coil meter with pointer. White scale 0-5 "AMP" in 0.1 A divisions. 0.025 Ω . (b) Voltmeter. As (a), except scale 0-10 "VOLT" in 0.2 V divisions. 1818 Ω . Made by Erik Weitzmann, Hillerød.
c1920.

2409 (STENGYMN). Ammeter.
Signed on the scale: Präzisions-Amper-

emeter / C.Weitzmann's Etablissement / Hillerød / 51700.

The instrument, however, is imported by Weitzmann, and made by Hartmann & Braun.

c1900 (g).

Wooden case 185x130x210 with glass panel in front of the vertical scale. Moving coil with pointer on edge and scale with mirror reading. White scales 0-10 in 0.1 divisions and 0-1 in 0.01 divisions. Zero adjusting by rotating the coil.

2410 (STENGYMN). Voltmeter.
Signed on the scale: Präzisions-Voltmeter / C.Weitzmann's Etablissement / Hillerød / 52244 / bei 1 Volt / Widerstand 200 Ohm / 1°=0.01 Volt' and 'bei 10 Volt / Widerstand 2000 Ohm / 1°=0.1 Volt.

Same type of instrument as No 2409.
c1900 (g).

Wooden case 185x130x210 with glass panel in front of the vertical scale. Moving coil with pointer on edge and scale with mirror reading. White scales 0-10 in 0.1 divisions and 0-1 in 0.01 divisions. Zero adjusting by rotating the coil.

2411 (STENGYMN). Barometer.
Aneroid.

Signed: Cornelius Knudsen's / mek. Präzisionsværksted / Danmark.
c1900 (g).

Cast iron base, Dial 75 on three brass feet. Domed glass fastened with putty. Brass bellows and mechanism. White circular scale 715-805 in divisions of 1. Small hose connection in the iron base. Probably for educational use.

2412 (STENGYMN). Resistance.

Adjustable.

Signed: Instrumentfabriken / "Fysik"

Hillerød / ERIK WEITZMANN.

c1920.

Oak base 130x110. Black lacquered iron frame, porcelain cylinder Dia30 L50 with resistance wire wound around it. Sliding contacts with ebonite handles. Marked "3 A". Four terminals, one of them blind. Overall H95.

This is a type of instrument widely used in Danish schools during the first half of 20 century.

2413 (BRORFELD). Clock.

Astronomical.

Signed: Urban Jürgensen / København

c1870 (g).

Walnut and mahogany case. Mercury weighted pendulum with brass knurled nut adjustment. Metal dial Dia260 with arabic numerals. Window with hour scale. Large minute hand. Seconds dial Dia90. Overall H1860 W400 D256.

This clock was used with the transit circle at the observatory at Østervold in Copenhagen 1878.

2414 (KALUNMUS 5959). Circle, surveyor's. 'Holland circle'.

Signed: Carl von Mandern

c1730.

Brass. Circle Dia300 with four spokes and scale 0 to 360°. Tangential ruler and opposite a brass ring for suspension. At the lower half of the circle is a shadow square. Two sights diametrically parallel to the rule. Alidade with two sights.

2415 (KALUNMUS 15503).

Scale rule.

Signed: Carl v. Mandern Copen.

c1730.

Brass 169x27. One edge chamfered. One end extended and with hole for suspension. Rococo ornamentation. Four scales. Transversals.

2416 (KALUNMUS 2974).

Microscope. Compound. Turned wood. Dia39 L115.

2417 (KALUNMUS 2941).

Six weights. Brass. Marked 1/4 to 16.

2418 (KALUNMUS 16921, 16922).

Chondrometer. Seems to be a complete "Thieles Kornvægt No 9".

2419 (KALUNMUS 2453).

Hydrometer. Silver bar with spherical float. Two scales: 4-9 and 9-12. L225.

2420 (KALUNMUS 2454). Hydrometer.

Glass with lead shots. Paper scale 0 to 33, for specific gravity above that of water. Marked "Lageprøve efter Beaumé Temp. 12 1/2 R.F.W.Noor". L265.

2421 (KALUNMUS 2455). Hydrometer.

Glass with lead shots. Paper scale 0 to 16, for specific gravity below that of water. Marked "Alkoholmeter efter Spendrup Temp. 9° R. R.F.Noor".

2422 (KALUNMUS 2457). Thermometer.

Mercury in glass. Paper scale -40 to 95 Reaumur. Indications of temperatures for production of butter, beer and cheese. L322.

2423 (Kalundborg 986). Sun dial. Marble, probably Norwegian. 260x225x45. Hours are marked along the edge. Gnomon missing.

2424 (KALUNMUS 3709). Sun dial. Marble. 730x730. Lines are cut six cm from the edges. On the outer side of these is marked "ANNO 1711" and numerals for hours. Inside is a half sun with radii as sun rays. Gnomon missing.

2425 (HOFMANS G) Barometer. Cistern.
Signed: Prof Smiths Etablm i Kiöbenhavn.
c1820.

Turned oak, Dia30 L960. Boxwood cistern with ivory float, ivory tube with opening and index mark; the float is missing. Brass knob below the cistern to adjust zero. Brass top with ring for suspension. Brass scale graduated 26-30 inch in 1/12 inch divisions. Vernier divided 0-50 adjustable by thumb-screw below. Mercury in glass thermometer marked "Thermometer efter Reaumur", scale -30 to 85, L260. A brass ring around the middle could be intended for gimbals, and this is probably a marine barometer.

2426 (HJØRMUSE 1027, 2003, 977, 1637). Nests of weights. Four. 18th century (g).

Bronze. (a) Marked on the lid: L1, on the cups: 16,8,4,2. Not complete; (b) marked on the lid: C16, on the cups: 8,4,2,1, two more not marked; (c) marked on the lid: C8, complete set; (d) marked on the lid: S8, complete set.

2427 (HJØRMUSE 5285). Hydrometer.

Signed: Branteweinprobe A.Cetti fec. Late 18th century (fl).

Glass. For testing distilled spirits. Sphere Dia12 weighted with lead shots. Float sphere Dia22. Stem Dia3. Overall L145. Paper scale 1-16. Roughly carved shaped wooden box in two halves, hinged; maximum Dia43 H165.

2428 (HJØRMUSE 1966/258). Hydrometer.

Signed: Branteweinprobe A.Cetti fec. Late 18th century (fl).

Glass. For testing distilled spirits. Sphere Dia16 weighted with lead shots. Float sphere Dia25. Stem Dia3. Overall L165. Paper scale 1-13.

2429 (HJØRMUSE 1938/309). Hydrometer.

Signed: Branteweinprobe A.Cetti fec Copenhagen. Late 18th century (fl).

Glass. For testing distilled spirits. As item 2428, except L175 and scale 1-16. Cylindrical cardboard box Dia43 L180, covered with decorated paper.

2430 (HJØRMUSE). As item 2428, except L145. Scale 2-14.

Signed: Branteweinprobe A.Cetti fec. Late 18th century (fl).

2431 (HJØRMUSE). Hydrometer. Not signed.

Late 18th century (g).

Glass. Sphere Dia14 weighted with lead shots. Float sphere Dia22. Stem Dia4. Overall L130. Paper scale 1-12. Marked with crowned "C7" at top of scale.

2432 (HJØRMUSE 14820-D). Hydrometer with thermometer.

Signed: Kaisers Aræometer for Malt og Øl. Tp 14R. R. Isaacsen Kjöbenhavn.
Early 19th century (g).

The thermometer Dia18 L130; scale -10 to 40° Reaumur; the bulb acting as weight for the hydrometer with the stem above the thermometer. Stem Dia6. Overall L350. Paper scale 0-24.

2433 (HJØRMUSE 14820).

Hydrometers. Two.

Not signed.

First half 19th century (g).

Float sphere Dia32. Stem Dia8. Overall L260. Scale 0-17.

Marked: Alcoholmeter efter Spendrup Temp 9° Rr.

2434 (HJØRMUSE 14820-J).

Hydrometer.

Not signed.

First half 19th century (g).

Bulb weighted with mercury; float sphere Dia15 L40. Paper scale 75-100 marked "Alcoometre Centesimal". Overall L150. Cylindrical cardboard box Dia20 L170, covered with decorated paper.

2435 (HJØRMUSE 14820-E).

Hydrometer. Saccharometer.

Signed: Saccharometer efter Balling Temp 14° Rr. Corn Knudsen Kjöbenhavn.

Second half 19th century (g).

Glass. Dia24. Stem Dia4. Overall L230. Paper scale 0-5 in 0.1 divisions.

2436 (HJØRMUSE 14820-F).

Hydrometer. Saccharometer.

Not signed.

Second half 19th century (g).

Glass. Dia26. Stem Dia4. Overall L185. Paper scale 0-5.

Marked: Saccharometer Balling 14° Rr

2437 (HJØRMUSE 14820-C).

Hydrometer.

Not signed.

19th century (g).

Glass Dia17. Stem Dia4 Overall L195.

Paper scale divided 1.060 to 1.140. Marked: Kartoffel Prober T 14° R.

2438 (HJØRMUSE 14820-G and H).

Hydrometers. Two.

Signed on paper label: Versuchsstation des Verein der Spiritusfabrikanten BERLIN No 1050.

19th century (g).

Glass. Dia28. Black bulb Dia22. Stem Dia2. Overall L160. Paper scale 9-12.

Marked: Tralles Temp 15° Celsius.

2439 (private). Chondrometer. "Den lille Børsvægt".

Signed: A. F. Thiele Kiöbenhavn c1900 (g).

Brass. Funnel with pivoting bottom. Cylindric pan. Wooden striker for leveling. Equal balance arm with box ends. Gallows with circular opening for viewing the index. Four cylindrical and six square weights. Two wooden boxes. Trade label.

2440 (private). Calliper.

For measuring diameter of trees.

Not signed.

c1900 (g).

Boxwood scale, graduated in centimetres. Iron jaws.

2441 (private). Pace measure.

Not signed.

Late 19th century (g).

Mahogany with brass hinges. L~1600.

2442 (private). Caliper.
For measuring diameter of trees.
Not signed.
Late 19th century (g).
Mahogany with brass fittings. Parallel moving jaws with scissor linkage. Boxwood scale graduated in inch and sq inch. L~1800.

2443 (private). Chain, surveyor's.
Not signed
Late 19th century (g).
Iron with brass handles.

2444 (private). Drawing instruments.
Not signed.
Late 19th century (g).
Brass with steel points. Protractor, rule, divider, pair of compass with inserts for pencil and ink. Box with red lining.

2445 (ROSENHOLM). Döbereiner lamp.
Signed: Petit Pierre Berlin. Nr 857
Mid 19th century (g).
Built into a white porcelain 'vase' with green and gold ornamentation. Dia~180 H~200. The valve is operated

by tilting the arms of a chinese figure which then blows hydrogen out through the mouth. Platinum catalyst, held by a gilded snake, ignites the hydrogen.

2446 (ROSENHOLM). Barometer.
Wheel type.

Signed: Par Molinari
c1790 (g).

Gilded rococo wood carving. Scale graduated in inches but no numerals. Text in mixed Danish and German. Spirit thermometer.

2447 (Private). Gun powder proofer.
Not signed.

Mid 18th century (g).

Shaped as a pistol L400. Wood and iron. A toothed wheel Dia~50 has on an arm an iron cap fitting over a small cylinder to be filled with gunpowder. On firing the cap is thrown upwards making the wheel turn. The rotation is stopped by a ratchet. The teeth are numbered 1 to 24 indicating the strength of the gunpowder.

Index by name of instrument

1039	Acethylene gasworks	Not signed
1537	Adhesion experiment	Not signed
1536	Adhesion experiment	Not signed
1011	Adhesion plates	Not signed
1012	Adhesion plates	Not signed
1243	Adhesion plates	Not signed
1535	Adhesion plates	Not signed
1698	Aeolipila	Not signed
1699	Aeolipila	Not signed
1619	Air friction mill	Not signed
1035	Air gun	Christianiahn; Wernigeroda
1301	Air gun	Contriner
1300	Air gun	Lorenz; Vienna
1048	Air gun	Not signed
1073	Air pump, vacuum	Burmeister, C.; Copenhagen
862	Air pump, pressure	Dumotiez Frères; Paris
1364	Air pump, pressure	Dumotiez Frères; Paris
1054	Air pump, vacuum	Kohl, Max
1191	Air pump, vacuum	Nairne, E.; London
860	Air pump, vacuum	Not signed
863	Air pump, vacuum	Not signed
1050	Air pump, vacuum	Not signed
1193	Air pump, vacuum	Not signed
1192	Air pump, vacuum	Not signed
1365	Air pump, vacuum	Not signed
1492	Air pump, vacuum	Not signed
1442	Air pump, vacuum	Not signed
1791	Air pump, vacuum	Not signed
1607	Air pump, vacuum	Smith, Jeppe; Copenh.
1606	Air pump, vacuum	Weitzmann, C.; Hillerød
1278	Alembic, glass	Not signed
1764	Alidade, plane table	Carlson & Österberg; Gothenburg
685	Alidade, plane table	CJJ
1762	Alidade, plane table	H.R.W.;
1742	Alidade, plane table	Jünger, E.; Copenhagen
1743	Alidade, plane table	Jünger, E.; Copenhagen
1740	Alidade, plane table	Jünger, E.; Copenhagen
2318	Alidade, plane table	Klein, G.W.; Copenhagen
576	Alidade, plane table	Merz, G. & S.; München
425	Alidade, plane table	Not signed
657	Alidade, plane table	Not signed
569	Alidade, plane table	Not signed
568	Alidade, plane table	Not signed
554	Alidade, plane table	Not signed
686	Alidade, plane table	Not signed
1738	Alidade, plane table	Not signed
1741	Alidade, plane table	Not signed
1758	Alidade, plane table	Not signed
1761	Alidade, plane table	Not signed

1763	Alidade, plane table	Not signed
1757	Alidade, plane table	Not signed
1739	Alidade, plane table	Poulsen, H.; Copenhagen
1666	Alidade, telescopic	Geod. Inst.; Copenhagen 1197
567	Alidade, telescopic	Klein, G.W.; Copenhagen
549	Alidade, telescopic	Not signed
1885	Alidade, telescopic	Not signed
2323	Alidade, telescopic	Not signed
2330	Alidade, telescopic	Not signed
2321	Alidade, telescopic	Not signed
2251	Alidade, telescopic	Not signed
548	Alidade, telescopic	Poller; Leipzig
2326	Alidade, telescopic	Raeffle; Berne
48	Almanac	La Carrière, Thomas
1921	Altitude semicircle	Not signed
166	Altitude sextant	Holst, H.E.; Copenhagen
1201	Ammeter	Gebr. Ruhstrat; Göttingen
1200	Ammeter	Helweg Mikkelsen, Copenhagen
2409	Ammeter	Weitzmann (Hartmann & Braun)
964	Ammeter, hot-wire	Kohl, Max; Chemnitz
2226	Ammeter, moving iron	Not signed
1198	Ammeter, precision	Siemens & Halske; Berlin
2408	Ammeter, Voltmeter	Weitzmann, E.; Hillerød
937	Ampere apparatus	Not signed
2212	Ampère's experiment	Not signed
2211	Ampère's experiment	Not signed
1136	Amplifier tube	Gottlieb Hansen; Copenhagen
1228	Anemometer	Alnor; Illinois
814	Anemometer	Knudsen, Corn.; Copenhagen
620	Anemometer	Not signed
373	Anemometer, Hagemann	Not signed
27	Archimedian screw	Not signed
28	Archimedian screw	Not signed
769	Archimedian screw	Not signed
1474	Archimedian screw	Not signed
1562	Archimedian spiral	Not signed
1774	Archimedian spiral	Weitzmann (?); Hillerød
91	Armillary sphere	Habrecht, Isaac; Strassburg
1679	Armillary sphere, cel.	Neale; London
1678	Armillary sphere, ter.	Neale; London
499	Armillary sphere	Not signed
288	Armillary sphere	Schlemmer, Hans;
497	Armillary sphere	Schotte, E.; Berlin
821	Artificial horizon	Bryde, F.; Copenhagen
140	Artificial horizon	Jones, Thomas; London
163	Artificial horizon	Not signed
205	Artificial horizon	Not signed
180	Artificial horizon	Not signed
1176	Artificial horizon	Not signed
1906	Artificial horizon	Not signed
253	Astrolabe	Not signed
577	Astrolabe	Persian(?)

1355	Attwood fall machine	Dumotiez Frères; Paris
1543	Atw. fall mach., wheels	Not signed
408	Azimuth circle	Knudsen, Corn.; Copenhagen
423	Azimuth circle	Not signed
258	Azimuth mirror	Hughes, H. & Son; London
189	Azimuth mirror	Knudsen, Corn.; Copenhagen
420	Azimuth mirror	Knudsen, Corn.; Copenhagen
1085	Azimuth mirror	Knudsen, Corn.; Copenhagen
1084	Azimuth mirror	Knudsen, Corn.; Copenhagen
256	Azimuth mirror	Plath, C.; Hamburg
1146	Azimuth mirror	Weilbach; Copenhagen
1933	Azimuth reflector	Volta
2175	Backstaff	illegible
249	Backstaff	Not signed
248	Backstaff	Not signed
246	Backstaff	Not signed
247	Backstaff	Not signed
1463	Backstaff	Stephen, Alex; Dublin
2110	Balance	Arbo-Bähr & Co; Copenhagen
51	Balance	Not signed
315	Balance	Not signed
1610	Balance	Not signed
1989	Balance	Not signed
1991	Balance	Not signed
1992	Balance	Not signed
1957	Balance	Not signed
1990	Balance	Not signed
2041	Balance	Not signed
2109	Balance	Not signed
2178	Balance	Veritas
294	Balance, angled beam	Not signed
55	Balance, assay	Not signed
310	Balance beams on stand	Not signed
461	Balance, butyrometer	Sørensen, Ferd.F.; Copenhagen
2108	Balance, chemical	Bruhn & Lehrmann; Copenhagen
1411	Balance, chemical	Fleischer, H.; Berlin
1414	Balance, chemical	Jünger, E.; Copenhagen
1075	Balance, chemical	Klein, G.W.; Copenhagen
1229	Balance, chemical	Not signed
1960	Balance, chemical	Not signed
1967	Balance, chemical	Not signed
1959	Balance, chemical	Not signed
1958	Balance, chemical	Not signed
1515	Balance, chemical	Struers, Copenhagen
2369	Balance, coin	Koppel, Rud.; Hamburg
777	Balance, coin	Not signed
778	Balance, coin	Not signed
2038	Balance, coin	Not signed
2035	Balance, coin	Not signed
2071	Balance, coin	Not signed
2070	Balance, coin	Poppenberg, J.P.; Blankenstein
313	Balance, compound	Not signed

317	Balance, decimal, model	Not signed
1023	Balance, decimal	Not signed
286	Balance, educational	Not signed
1021	Balance, educational	Not signed
1339	Balance, electrostatic	Not signed
295	Balance, grocer's	Not signed
1239	Balance, hydrostatic	Not signed
2305	Balance, hydrostatic	Not signed
775	Balance, hydrostatic	Sartorius; Göttingen
316	Balance, letter scale	Not signed
1587	Balance, Lloyd magnetic	Falck Rasmussen; Copenhagen
1589	Balance, magnetic	Not signed
1404	Balance, Nernst	Spindler & Hoyer; Göttingen
318	Balance, Roberval's	Not signed
1410	Balance, short beam	Bunge, Paul; Hamburg
1405	Balance, short beam	Bunge, Paul; Hamburg
1227	Balance, spec. grav.	Westphal; Celle
781	Balance, spring	Not signed
782	Balance, spring	Salter's
2372	Balance stand	Not signed
784	Balance, steelyard	
783	Balance, steelyard	Not signed
45	Balance, weights	Not signed
1325	Balance, Westphal's	Not signed
296	Balance, chinese Dotchin	Not signed
942	Barlow's wheel	Not signed
2214	Barlow's wheel	Not signed
204	Barograph, aneroid	Not signed
203	Barograph, aneroid	Sestrel
85	Barometer	Not signed
1160	Barometer, alt. meter	Thiele, F.A.; Copenhagen
1242	Barometer, aneroid	Holst, H.E.; Copenhagen
2411	Barometer, aneroid	Knudsen, Corn.; Copenhagen
1793	Barometer, aneroid	Nissen, J.; Copenhagen
750	Barometer, aneroid	Nissen, J.; Copenhagen
808	Barometer, aneroid	Not signed
1574	Barometer, aneroid	Weitzmann, C.
1946	Barometer, banjo	Not signed
1983	Barometer, cistern	Aureggi, Carlo
2131	Barometer, cistern	Bianchi, P.; Aalborg
2388	Barometer, cistern	Hoyer; Axel; Denmark
382	Barometer, cistern	Jensen, J.C.; Esbjerg
2404	Barometer, cistern	Johansen, Hans; Lemming
1792	Barometer, cistern	Jünger, E.; Copenhagen
107	Barometer, cistern	Lerra, Ioh.
468	Barometer, cistern	Molinari, A.; Copenhagen
472	Barometer, cistern	Molinari, A.; Copenhagen
383	Barometer, cistern	Mowbray; Hartlepool
2392	Barometer, cistern	Nielsen, Carl; Copenhagen
1794	Barometer, cistern	Nissen, J.; Copenhagen
368	Barometer, cistern	Not signed
2060	Barometer, cistern	Not signed

2382	Barometer, cistern	Not signed
2393	Barometer, cistern	Not signed
2396	Barometer, cistern	Not signed
2384	Barometer, cistern	Not signed
1999	Barometer, cistern	Simon, M.
1982	Barometer, cistern	Simoni, M.; Denmark
2425	Barometer, cistern	Smith, Jeppe; Copenh
367	Barometer, cistern	Williams; Cardiff
2336	Barometer, Fortin	Pistor & Nartins; Berlin
466	Barometer, Guericke's	Not signed
467	Barometer, Huyghen's	Molinari, A.; Copenhagen
2129	Barometer, Huyghen's	Not signed
366	Barometer, marine	Bassnett; Liverpool
375	Barometer, marine	Harrison, J.; Hull
811	Barometer, marine	Simon, L.; South Shields
2361	Barometer, marine	Smith, Jeppe; Copenh.
653	Barometer, marine	Smith, Jeppe; Copenhagen
216	Barometer, marine	Smith; Copenhagen
2130	Barometer, marine	Teathers; Dundee
470	Barometer, Morland's	Not signed
1803	Barometer, siphon	Jacob, F.C.; Copenhagen
469	Barometer, siphon	Molinari, A.; Copenhagen
474	Barometer, siphon	Nissen, J.; Copenhagen
473	Barometer, siphon	Rénard; Copenhagen
619	Barometer, surveying	Holst; Copenhagen
1037	Barometer, weighing	Not signed
66	Barometer, wheel	Lerra, Johannes
2446	Barometer, wheel	Molinari, A.; Copenhagen
601	Beam compass (?)	Not signed
1418	Beam compass	Treschler, Christoff
402	Bearing dial	Bain & Ainsley
407	Bearing dial	Heath's London Polaris
416	Bearing dial	Holst, H.E.; Copenhagen
417	Bearing dial	Holt, I.L.; Tønsberg
405	Bearing dial	Hughes, H. & Son; London
1149	Bearing dial	Kelvin & Hughes
399	Bearing dial	Kelvin & White
426	Bearing dial	Knudsen, Corn.;
255	Bearing dial	Knudsen, Corn.; Copenhagen
195	Bearing dial	Knudsen, Corn.; Copenhagen
257	Bearing dial	Knudsen, Corn.; Copenhagen
188	Bearing dial	Knudsen, Corn.; Copenhagen
403	Bearing dial	Knudsen, Corn.; Copenhagen
419	Bearing dial	Knudsen, Corn.; Copenhagen
1089	Bearing dial	Krohn, J.C.; Bergen
427	Bearing dial	Lilley & Son; London
398	Bearing dial	Ludolph, W.; Bremerhaven
401	Bearing dial	Middleton & Co; Hartlepool
102	Bearing dial	Not signed
104	Bearing dial	Not signed
424	Bearing dial	Not signed
422	Bearing dial	Not signed

410	Bearing dial	Not signed
1091	Bearing dial,	Not signed
1883	Bearing dial	Not signed
1908	Bearing dial	Not signed
1	Bearing dial	Plath, C.; Hamburg
1090	Bearing dial	Polaris; London
400	Bearing dial	Reynolds & Wiggins; London
415	Bearing dial	Steger Jr; Kiel
404	Bearing dial	Wiggins, Frederick; London
406	Bearing dial, 'Palinurus'	Not signed
409	Bearing instrument	Not signed
1086	Bearing sight	Weilbach, Iver C.; Copenhagen
429	Bearing sights	Not signed
1931	Bearing sights	Weilbach, Iver C.; Copenhagen
1289	Bell jar, vacuum.	Not signed
876	Bell jar, electroscope	Not signed
870	Bell jar, mercury rain	Not signed
1306	Bell jar, vacuum	Not signed
1302	Bell jar, vacuum	Not signed
1304	Bell jar, vacuum	Not signed
1303	Bell jar, vacuum	Not signed
1294	Bell jar, vacuum	Not signed
1286	Bell jar, vacuum	Not signed
1287	Bell jar, vacuum	Not signed
1288	Bell jar, vacuum	Not signed
1290	Bell jar, vacuum	Not signed
1285	Bell jar, vacuum	Not signed
1293	Bell jar, vacuum	Not signed
1296	Bell jar with propeller	Not signed
1295	Bell jar, vacuum	Not signed
1307	Bell jar, vacuum	Not signed
1299	Bell jar, vacuum	Not signed
1291	Bell jar, vacuum	Not signed
1311	Bell jar, vacuum	Not signed
1284	Bell jars, vacuum	Not signed
1327	Bichromate cell	Not signed
1556	Billard	Not signed
1059	Bimetal demonstration	Not signed
211	Binnacle	Hallgren, Copenhagen
158	Binnacle	Holst, H.E.; Copenhagen
449	Binnacle	Kelvin & James White; Glasgow
2061	Binnacle	Knudsen. Corn.; Copenhagen
168	Binnacle	Not signed
212	Binnacle	Not signed
157	Binnacle	Weilbach, Iver; Copenhagen
1083	Binnacle, educational	Knudsen. Corn.; Copenhagen
1082	Binnacle, educational	Weilbach, Iver C.; Copenhagen
1081	Binnacle, educational	Weilbach, Iver C.; Copenhagen
1080	Binnacle, educational	Weilbach, Iver C.; Copenhagen
1910	Binnacle head	Knudsen. Corn.; Copenhagen
122	Binnacle lamp	Not signed
161	Binoculars	Not signed

2003	Bismer	C.C.S.
2004	Bismer	M.J.D.
2036	Bismer	Not signed
851	Blowtorch	Not signed
1697	Blowtorch, Marquard	Not signed
362	Bodies for density exp.	Not signed
1851	Bourdon tube, demonstr.	Not signed
1113	Brand	Not signed
1114	Brand	Not signed
1112	Brand	Not signed
1111	Brand	Not signed
76	Burning glass, amber	Spengler, Lorenz; Copenh
77	Burning glass, amber	Spengler, Lorenz; Copenh
1212	Calculating machine	Brunsviga; Braunschweig
1216	Calculating machine	Friden; Holland
1211	Calculating machine	Original-Odhner; Aalborg
889	Calculator	Not signed
2349	Calculator, anchoring	Knudsen. Corn.; Copenhagen
371	Calculator, anchoring	Not signed
2365	Calculator, course (?)	Lyth, G.W.; Stockholm
196	Calculator, military	Not signed
197	Calculator, military	BWS
165	Calculator, military	Not signed
200	Calculator, military	Not signed
182	Calculator, military	Thomsen & Schwarzkopf; Kiel
1841	Calculator, Thatcher's	Keuffel & Esser; New York
79	Calender	Tammke, Bernhardus
47	Calender, perpetual	Not signed
50	Calender, perpetual	Not signed
2235	Calender, perpetual	Not signed
56	Calender stick	Not signed
2342	Caliper, sliding	Magde(?)
2344	Caliper, sliding	Not signed
2345	Caliper, sliding	Not signed
2343	Caliper, sliding	Smith; Copenhagen
2440	Calliper, forestry	Not signed
2442	Calliper, forestry	Not signed
476	Calliper, sliding	Escher; Kempten
1695	Calorimeter, Lavoisier	Not signed
2304	Calorimeter, Regnault	Ducretet, E.; Paris
659	Camera lucida	Not signed
658	Camera lucida	Not signed
1656	Camera lucida,	Voigtländer, F.; Vienna
482	Camera obscura	Not signed
832	Camera obscura	Not signed
1655	Camera obscura	Not signed
2310	Camera obscura	Not signed
830	Camera obscura	W. & S.
1125	Camera, bellows	Butz-Müller; Copenhagen
2311	Camera, daguerreotype	Not signed
1139	Camera, mahogany	Budtz & Møller; Copenhagen
1369	Camera, photo	Eastman; Rochester

1370	Camera, photo	Not signed
1528	Can, 'magic'	Not signed
1223	Capacitor	Elliott Bros; London
1392	Capacitor	Jensen, N.C.; Copenhagen
1393	Capacitor	Jensen, N.C.; Copenhagen
1391	Capacitor	Jensen, N.C.; Copenhagen
1053	Capacitor	Not signed
1221	Capacitor	Siemens & Halske; Berlin
1347	Capacitor, standard	Siemens & Halske; Berlin
978	Capacitor, variable	Dansk Telegrafonfabrik; Copenh.
1349	Capacitor, variable, air	Knudsen. Corn.; Copenhagen
919	Capacitor, variable, air	Not signed
1340	Capacitor, variable, air	Not signed
1341	Capacitor, variable, air	Not signed
1478	Capacitor, variable, air	Not signed
2282	Capacitor, variable, air	Not signed
2285	Capacitor, variable, air	Not signed
1222	Capacitor, variable, air	Jensen, N.C.; Copenhagen
1354	Capacitor, Volta's	Not signed
1357	Capillary tubes	Not signed
1539	Capillary tubes	Not signed
36	Capstan, model	Not signed
1005	Capstan, model	Not signed
852	Carbon arc lamp	Kohl, Max; Chemnitz
853	Carbon arc lamp	Not signed
994	Carriage with propeller	Weitzmann
1483	Cartesian divers	Not signed
99	Centre of gravity dem.	Not signed
312	Centre of grav.exp.	Not signed
302	Centre of gravity box	Not signed
1551	Centrifugal machine	Not signed
1775	Centrifugal machine	Not signed
483	Centrifugal machine	Struers; Copenhagen
1484	Centrifugal machine	Weitzmann, C.
1443	Centrifugal machine	Weitzmann; Frederiksborg
1552	Centrifugal pump	Not signed
1753	Chain, surveyor's	Knudsen. Corn.; Copenhagen
2360	Chain, surveyor's	Not signed
2443	Chain, surveyor's	Not signed
2058	Chemicals, antidote box	Nyrop, Camillus; Copenhagen
2155	Chemist's glass etc	Not signed
841	Chladni plates	Not signed
2073	Chondrometer	D.F.E.
1615	Chondrometer	Ehlers, D.F.; Hamburg
2074	Chondrometer	Jørgensen, L.; Horne
1616	Chondrometer	Thiele, F.A.; Copenhagen
2040	Chondrometer	Thiele, F.A.; Copenhagen
2039	Chondrometer	Thiele, F.A.; Copenhagen
2383	Chondrometer	Thiele, F.A.; Copenhagen
2418	Chondrometer	Thiele, F.A.; Copenhagen
2439	Chondrometer	Thiele, F.A.; Copenhagen
1582	Chronograph	Richard Frères; Paris

730	Chronometer, marine	Arnold; London
543	Chronometer, marine	Dent; London
1169	Chronometer, marine	GUB; DDR
1943	Chronometer, marine	Hohwy; Amsterdam
729	Chronometer, marine	Johannsen, A.; London
2362	Chronometer, marine	Kessels; Altona
524	Chronometer, marine	Mercer, Th.; St.Albans
1170	Chronometer, marine	Mercer, Th.; St.Albans
1901	Chronometer, marine	Otte, Ed.; Altona
178	Chronometer, marine	Parkinson & Frodsham
2158	Chronometer, marine	Pihl, B.; St.Petersburg
213	Chronometer, marine	Ranch's, Carl EFTF; Copenhagen
1171	Chronometer, marine	Weillbach, Iver C.; Copenhagen
542	Chronometer, pocket	Jürgensen, U.; Copenhagen
103	Chronoscope	Jaspar, J.; Liège
1138	Chronoscope	Zimmermann, E.; Leipzig
1120	Chronoscope, Hipp	Hipp, M.; Neuchatel
2355	Circle, reflecting	Pistor & Schiek; Berlin
2363	Circle, reflecting	Pistor, C.H.; Berlin
2248	Circle, repetition	Reichenbach & Ertel; München
2325	Circle, surveyor's	Ahl, Joh.;
1182	Circle, surveyor's	Ahl, Joh.; Copenhagen
1881	Circle, surveyor's	Ahl, Joh.; Copenhagen
559	Circumferentor	Not signed
162	Clinometer	Not signed
153	Clinometer	Not signed
475	Clinometer	Not signed
2347	Clinometer	Not signed
1164	Clinometer	Weillbach, Iver C.; Copenhagen
65	Clock	Jensen, Peder; Nøttestad
90	Clock, astronomical	Habrecht, Isaac; Strassburg
2413	Clock, astronomical	Jürgensen, U.; Copenhagen
289	Clock, astronomical	Siebenhaer, Nocolaus; Schleswig
1796	Clock, model	Not signed
1049	Clock, second's	Not signed
67	Clock, silver	Not signed
1298	Clock, vacuum demonstr.	Not signed
738	Cloud chamber	Struers; Copenhagen
1315	Cloud chamber	Struers; Copenhagen
1108	Coin balance	Drielenburch, Jacob
1078	Coin balance	Not signed
1077	Coin scale	Not signed
2284	Collector, Cavallo	Not signed
2283	Collector, Cavallo	Not signed
1122	Colour rotation mach.	Not signed
1812	Colour-sense tester	Preisler, F.; Copenhagen
1267	Combustion chamber	Not signed
357	Communicating vessels	Not signed
360	Communicating vessels	Not signed
358	Communicating vessels	Not signed
359	Communicating vessels	Not signed
743	Communicating vessels	Not signed

1517	Communicating vessels	Not signed
1514	Communicating vessels	Not signed
700	Compass	Moschino, P.G.; Genova
1261	Compass	Not signed
666	Compass, azimuth	A.O.S.
135	Compass, azimuth	Augsburg, August; Copenhagen
431	Compass, azimuth	Filby, D.; Hamburg
663	Compass, azimuth	Jünger, E.; Copenhagen
1876	Compass, azimuth	Jünger, E.; Copenhagen
551	Compass, azimuth	Negretti & Zambra; London
552	Compass, azimuth	Not signed
2366	Compass, azimuth	Not signed
2273	Compass, azimuth	Sangaard, O.P.; Copenhagen
432	Compass, azimuth	Weilbach, Iver; Copenhagen
1178	Compass, azimuth	Weilbach, Iver; Copenhagen
1863	Compass, azimuth	Weilbach; Copenhagen
1891	Compass, beam	Adrian, P.F.; Copenhagen
2018	Compass, beam	Not signed
711	Compass, bearing	A.K.
708	Compass, bearing	Carstens, Aug.; Hamburg
713	Compass, bearing	Gregory, H.; London
710	Compass, bearing	Holst, H.E.; Copenhagen
712	Compass, bearing	Not signed
128	Compass card	Baroni, E.; Gènes
2162	Compass card	Heilbuth, S.; London
101	Compass card	Jensen Borger, I.; Copenhagen
428	Compass card, Kelvin's	Knudsen, Corn.; Copenhagen
1914	Compass card	Mylasz, H.I.
512	Compass card	Not signed
1915	Compass card	Not signed
438	Compass card	Smith & Ramage; Aberdeen
701	Compass, chinese	Not signed
2206	Compass, chinese	Not signed
704	Compass, compensated	Knudsen, Corn.; Copenhagen
343	Compass, compensation	Müller, H.&F.; Trieste
2172	Compass, declination	Not signed
2204	Compass, declination	Not signed
284	Compass, declination	Not signed (Brander?)
958	Compass, declination	Weitzmann
1877	Compass, deviation	Jünger, E.; Copenhagen
515	Compass, deviation	Lesne; Paris
516	Compass, deviation	Not signed
674	Compass, deviation	Not signed
1756	Compass, deviation	Not signed
664	Compass, educational	Not signed
936	Compass, electro-magn.	Weitzmann
118	Compass, geomantic	Not signed
441	Compass, geomantic	Not signed
512	Compass, geomantic	Not signed
2236	Compass, geomantic	Not signed
62	Compass, ivory	Not signed
1162	Compass, Kelvin	Weilbach, Iver C.; Copenhagen

707	Compass, marine	Ainsley, H.R.; Cardiff
156	Compass, marine	Augsburg, August; Copenhagen
2069	Compass, marine	Augsburg, August; Copenhagen
445	Compass, marine	Bang, Stie; Copenhagen
703	Compass, marine	Boosnian, W.; Amsterdam
437	Compass, marine	Bram, Carl Chr.; Elsinore
709	Compass, marine	Cail, J.; Newcastle
123	Compass, marine	Diderichsen, Jacob; Copenhagen
2165	Compass, marine	Holst, A.; Faaborg
510	Compass, marine	Holst; Copenhagen
442	Compass, marine	Holsts, H.E. Eft; Copenhagen
2205	Compass, marine	Jas. Blair; Newcastle
518	Compass, marine	Kempel; Aarhus
444	Compass, marine	Kirkeby, L.; Copenhagen
1939	Compass, marine	Kirkeby, L.; Copenhagen
202	Compass, marine	Knudsen, Corn.; Copenhagen
1430	Compass, marine	Knudsen, Corn.; Copenhagen
702	Compass, marine	Koch, Rasmus; Copenhagen
705	Compass, marine	Lyth, G.W.; Stockholm
443	Compass, marine	Meyjes Jeremsz; Amsterdam
10	Compass, marine	Moralee, W.H.; North Shields
665	Compass, marine	Not signed
1938	Compass, marine	Not signed
1916	Compass, marine	Not signed
1934	Compass, marine	Not signed
2367	Compass, marine	Not signed
2166	Compass, marine	Pascall Atkey & Son; Cowes
1937	Compass, marine	Petersen, C.F.; St.Pauli
434	Compass, marine	Selter, D.B.; Amsterdam
260	Compass, marine	Weilbach, Iver C.; Copenhagen
1904	Compass, marine	Weilbach, Iver C.; Copenhagen
706	Compass, marine	Weilbach, Iver; Copenhagen
290	Compass, marine	Weilbach, Johan Philip; Copenh.
1177	Compass, marine	Weilbach, P; Copenhagen
435	Compass, ornamental	Kock, Rasmus; Copenhagen
1179	Compass, ornamental	Weilbach J.C.; Copenhagen
75	Compass, pocket	Not signed
440	Compass, portable	Berg, Peter; Copenhagen
520	Compass, portable	Berg; Copenhagen
517	Compass, portable	Holst; Copenhagen
522	Compass, portable	Jensen Borger, I; Copenhagen
1157	Compass, portable	Jensen Borger, I; Copenhagen
439	Compass, portable	Not signed
514	Compass, portable	Not signed
523	Compass, portable	Not signed
521	Compass, portable	Not signed
519	Compass, portable	Schubert; Freyberg
1154	Compass, portable	Weilbach, J.P.; Copenhagen
1156	Compass, portable	Weilbach, J.P.; Copenhagen
1155	Compass, portable	Weilbach, J.P.; Copenhagen
1236	Compass, proportional	Richter, O.; Chemnitz
44	Compass, silver	Not signed

1142	Compass, sun	Not signed
563	Compass, surveyor's	Richer; Paris
210	Compass, tell-tale	Jensen Borger, I.; Copenhagen
511	Compass, tell-tale	Jensen Borger, I.; Copenhagen
1951	Compass, tell-tale	Koch, Rasmus; Copenhagen
269	Compass, tell-tale	Lystrup, Christian; Copenhagen
270	Compass, tell-tale	Meyer, F.; Glückstadt
430	Compass, tell-tale	Ritchie & Sons; Brookline Mass
433	Compass, tell-tale	Wedel-Jarlsbergs Patent
1100	Compass, Thomson type	Weilbach, Iver G.; Copenhagen
336	Compass, variation	Not signed
1576	Compass, variation	Not signed
1273	Condensation tube	Not signed
1719	Conductor	Not signed
1717	Conductor	Not signed
1711	Conductor	Not signed
2081	Conductor	Not signed
2077	Conductor	Not signed
2078	Conductor	Not signed
1345	Conductor (?)	Not signed
2100	Conductor, flexible	Not signed
2274	Conductor, glass stand	Not signed
2264	Conductor, rotating	Not signed
1468	Conductor, spherical	Not signed
1710	Conductors	Not signed
2076	Conductors	Not signed
2267	Conductors	Not signed
1030	Conductors on stands	Not signed
918	Conductors, spherical	Not signed
96	Conveyor models	Not signed
397	Course corrector	Cook, B. & Son; Hull
369	Course indicator	Battenberg, Elliott Br; London
342	Course indicator	Not signed
259	Course magnifier	Knudsen, Corn.; Copenhagen
421	Course magnifier	Knudsen, Corn.; Copenhagen
1144	Course magnifier	Knudsen, Corn.; Copenhagen
1004	Crane, model	Not signed
37	Crane models	Not signed
94	Crank, 3 with pistons	Not signed
1880	Cross head	Holst, H.E.; Copenhagen
1878	Cross head	Knudsen, Corn.; Copenhagen
1839	Cross head	Not signed
2013	Cross, voltaic	Not signed
250	Cross-bow quadrant	Jensen, Jens Kusk; Denmark
741	Crystal models	Not signed
301	Cube, wooden	Not signed
306	Cyl. rolling up a slope	Not signed
305	Cyl. rolling up a slope	Not signed
1597	D-variometer	Edelmann; München
2189	Daniell's cell	Not signed
121	Davis quadrant	Gilbert, John; London
110	Davis Quadrant	Not signed

818	Deflector	Knudsen. Corn.; Copenhagen
1140	Deflector	Not signed
1141	Deflector	Weilbach, Copenhagen
1098	Deflector	Weilbach, Iver C.; Copenhagen
1143	Deflector	Weilbach, Iver C.; Copenhagen
1903	Deflector, Clausen	Knudsen. Corn.; Copenhagen
254	Depth sounder	Knudsen. Corn.; Copenhagen
453	Depth sounder	Knudsen. Corn.; Copenhagen
451	Depth sounder	Knudsen. Corn.; Copenhagen
450	Depth sounder	Knudsen. Corn.; Copenhagen
1094	Depth sounder	Knudsen. Corn.; Copenhagen
1898	Depth sounder, Mariotte	Knudsen. Corn.; Copenhagen
1909	Depth sounder	Knudsen. Corn.; Copenhagen
1936	Depth sounder	Lilley's patent
376	Depth sounder	Lyth, G.W.; Stockholm
800	Depth sounder	Massey, Ed.; London
452	Depth sounder	Not signed
699	Depth sounder	Not signed
1099	Depth sounder	Not signed
801	Depth sounder	Walker, T.; London
1175	Depth sounder, waywiser	Walker, Th. & Son; Birmingham
1174	Depth sounder, waywiser	Walker, Th. & Son; Birmingham
1168	Depth sounder	Weilbach, Iver C.; Copenhagen
1966	Destiller	Not signed
525	Deviatometer	Hughes & Son; London
2300	Dewar flask	Not signed
17	Diagonal machine, Yelin	Not signed
16	Diagonal machine, Amont.	Not signed
18	Diagonal machine, Nollet	Not signed
826	Diffraction grating	Rowland's; Baltimore
1702	Digester, Papin	Not signed
749	Dilatation meter	Knudsen. Corn.; Copenhagen
748	Dilatation meter	Not signed
1241	Dilatation meter	Not signed
746	Dilatation meter	Weitzmann; Copenhagen
747	Dilatation meter	Weitzmann; Copenhagen
1579	Dip circle	Buzengeiger, W.G.; Tübingen
1594	Dip circle	Dover, John
1779	Dip circle	Ernecke, F.; Berlin
1847	Dip circle	Not signed
1902	Dip circle	Not signed
2281	Dip circle	Not signed
1595	Dip meter, induction	Edelmann; München
271	Dip needle	Brander, G.F.; Augsburg
1263	Dip needle	Gambey; Paris
1437	Dip needle	Jünger, E.; Copenhagen
190	Dip needle	Kelvin Bottomley & Baird
1600	Dip needle	Klein, G.W.; Copenhagen
201	Dip needle	Knudsen, Corn.; Copenhagen
272	Dip needle	Not signed
1922	Dip needle	Weilbach, E.; Copenhagen
1092	Dip needle	Weilbach, Iver C.; Copenhagen

1184	Diptych	Ansonia Clock Co.; New York
115	Diptych	Tucher, Thomas; Nuremberg
82	Diptych, gilded	Holm, A.
78	Diptych, ivory	Kärner, Leonhard A; Nuremb.
2231	Diptych, ivory	Miller Lienhart; Nuremberg
1185	Diptych, Japanese(?)	(?)
43	Diptych, silver	Not signed
332	Diptych, wood	Autor
330	Diptych, wood	Kühninger, J.P.
331	Diptych, wood	Not signed
329	Diptych, wood	Not signed
815	Diptych, wood	Not signed
897	Disch. tube, maltese cr.	Not signed
1428	Disch. tube, maltese cr.	Not signed
1429	Disch. tube, mica wheel	Not signed
877	Discharge flask	Not signed
916	Discharge flask	Not signed
1352	Discharge flask	Not signed
2262	Discharge to air	Not signed
906	Discharge tube	Not signed
905	Discharge tube	Not signed
868	Discharge tube	Not signed
899	Discharge tube	Not signed
864	Discharge tube, aurora	Not signed
898	Discharge tube	Not signed
985	Discharge tube, Geissler	Not signed
873	Discharge tube	Not signed
1321	Discharge tube, phosph.	Not signed
1320	Discharge tube, vacuum	Not signed
1308	Discharge tube	Not signed
1350	Discharge tube	Not signed
1351	Discharge tube	Not signed
1310	Discharge tube	Not signed
1309	Discharge tube	Not signed
1471	Discharge tube (?)	Not signed
1786	Discharge tube, Geissler	Not signed
1787	Discharge tube, Geissler	Not signed
2096	Discharge tube	Not signed
2097	Discharge tube	Not signed
982	Discharge tube, la Rive	Struers; Copenhagen
986	Discharge tubes, Crooke	Not signed
2101	Discharge tubes	Not signed
1721	Discharger	Not signed
920	Discharger	Weitzmann; Hillerød
878	Discharger, Henley's	Not signed
2084	Discharger, Henley's	Not signed
874	Dischargers, jointed	Not signed
1720	Discharging tong	Not signed
2272	Discs for electrophorous	Not signed
1128	Distance estimate. app.	Zimmermann, E.; Leipzig
1894	Divider	Not signed
697	Divider	Treschler, C.; Dresden

2015	Dividers	Not signed
2016	Dividers	Not signed
411	Dividing disc(?)	Not signed
648	Dividing plate	Not signed
760	Diving bell, model	Not signed
307	Double cone on slope	Not signed
995	Double cone, on slope	Not signed
1998	Draughting rule	Schultz, W. Copenhagen
681	Drawing instr. (?)	jtt; Nürnberg
2242	Drawing instruments	Culpeper; London
2244	Drawing instruments	Gilbert Wright & Hooke; London
219	Drawing instruments	Jefferson, A.; Hull
167	Drawing instruments	Kern & Cie; Aarau
2245	Drawing instruments	Mandern, Carl v.; Copenhagen
2239	Drawing instruments	Nairne, E.; London
71	Drawing instruments	Not signed
1461	Drawing instruments	Not signed
1460	Drawing instruments	Not signed
1861	Drawing instruments	Not signed
1887	Drawing instruments	Not signed
2046	Drawing instruments	Not signed
2047	Drawing instruments	Not signed
2444	Drawing instruments	Not signed
615	Drawing instruments	Smith, Jeppe; Copenhagen
1889	Drawing instruments	Smith, Jeppe; Copenhagen
1888	Drawing instruments	Smith; Copenhagen
2173	Drawing instruments	W. & H. C.
1074	Dynamo	Otzen & Thorstenson; Copenhagen
850	Döbereiner lamp	Not signed
849	Döbereiner lamp	Not signed
1728	Döbereiner lamp	Not signed
2445	Döbereiner lamp	Not signed
1625	Ear model	Schwartz, J.A. (?); Copenhagen
840	Ear trumpet	Not signed
1624	Ear trumpet	Not signed
2057	Ear trumpet	Not signed
2376	Ear trumpet	Not signed
2375	Ear trumpet	Nyrop, Camillus; Copenhagen
2402	Ear trumpets	Not signed
87	Eclipsareon, Rømer's	Thuret, J.; Paris
485	El. generator, Wimshurst	Voltana
105	Electric ballist. instr.	Jaspar, J.; Liège
2086	Electric dance	Not signed
2090	Electric glass breaking	Not signed
2091	Electric glass breaking	Not signed
2087	Electric mortar	Not signed
2138	Electric mortar	Not signed
932	Electric motor, model	Knudsen, Corn.; Copenhagen
927	Electric motor	L'Électricité Ateliers; Paris
930	Electric motor	Not signed
934	Electric motor	Not signed
933	Electric motor	Not signed

987	Electric railway	Kohl, Max; Chemnitz
2085	Electric see-saw	Not signed
2190	Electric stand	Not signed
2263	Electrical circus	Not signed
2289	Electromagnetic motor	Nissen, J.; Copenhagen
1203	Electrochemical cells	Not signed
2198	Electrolysis of water	Not signed
2197	Electrolysis of water	Not signed
925	Electromagn. generator	Nissen, J.; Copenhagen
926	Electromagn. generator	Not signed
928	Electromagn. generator	Otzen & Thorstenson; Copenhagen
953	Electromagnetic kit	Not signed
2194	Electrometer, Bohnenberg	Not signed
1718	Electrometer, Coulomb	Fortin; Paris
894	Electrometer, Coulomb	Not signed
1329	Electrometer, Coulomb	Not signed
1505	Electrometer, Coulomb	Not signed
1723	Electrometer, discharge	Cuthbertson; London
1724	Electrometer, discharge	Cuthbertson; London
2195	Electrometer, Fechner	Not signed
896	Electrometer, Grimsahl	Kohl, Max; Chemnitz
1722	Electrometer, Hauch	Not signed
892	Electrometer, Henley	Not signed
891	Electrometer, Henley	Not signed
1716	Electrometer, Henley	Not signed
2188	Electrometer, Lane	Not signed
993	Electrometer, quadrant	Knudsen. Corn.; Copenhagen
1398	Electrometer, Wilson	Cambridge Scientific Instr
871	Electrophorous	Not signed
2269	Electrophorous	Not signed
2268	Electrophorous, double	Not signed
490	Electroscope	Not signed
890	Electroscope	Not signed
1467	Electroscope	Not signed
1466	Electroscope	Not signed
1715	Electroscope	Not signed
1713	Electroscope, Bennet	Not signed
1714	Electroscope, condenser	Not signed
1323	Electroscope, goldleaf	Not signed
1712	Electroscope, Volta	Not signed
1472	Electrost. gen. Holtz	Not signed
887	Electrost. gen. induct.	Not signed
895	Electrost. planet syst.	Not signed
2149	Electrost. disch. belljar	Not signed
2150	Electrost. disch. belljar	Not signed
1328	Electrost. gen. Wimshurst	Ducretet; Paris
1070	Electrost. gen. Wimshurst	Knudsen. Corn.; Copenhagen
1444	Electrost. gen. Wimshurst	Not signed
910	Electrost. gen. Wimshurst	Not signed
907	Electrost. gen. Wimshurst	Not signed
1605	Electrost. gen. Wimshurst	Weitzmann, C; Hillerød
2075	Electrostat. gen. mercury	Not signed

1348	Electrostatic bells	Not signed
880	Electrostatic chimes	Not signed
2182	Electrostatic chimes	Not signed
2183	Electrostatic chimes	Not signed
1709	Electrostatic demonstr.	Not signed
2288	Electrostatic gen. Carré	Klein, G.W.; Copenhagen
1368	Electrostatic gen. ind.	Knudsen. Corn.; Copenhagen
2290	Electrostatic gen. Holz	Weitzmann, C.; Hillerød
2291	Electrostatic gen. Holz	Weitzmann; C.; Hillerød
1726	Electrostatic gen.frict.	Dumotiez Frères; Paris
1725	Electrostatic gen.frict.	Nairne, E.; London
1031	Electrostatic gen.frict.	Not signed
1051	Electrostatic gen.frict.	Not signed
1445	Electrostatic gen. frict.	Not signed
1850	Electrostatic gen.frict.	Not signed
1727	Electrostatic gen.frict.	Not signed
2001	Electrostatic gen.frict.	Not signed
1034	Electrostatic gen.frict.	Weitzmann; Frederiksborg
1042	Electrostatic gen.frict.	Winter, Carl; Vienna
959	Electrostatic kit	Weitzmann; Hillerød
2266	Electrostatic lunarium	Not signed
884	Electrostatic see-saw	Not signed
886	Electrostatic see-saw	Not signed
885	Electrostatic see-saw	Not signed
2184	Electrostatic slope	Not signed
881	Electrostatic xylophone	Not signed
1121	Ergograph	Not signed
100	Evolution dial	Not signed
1237	Expansion apparatus(?)	Cambridge Scientific Instr.
1571	Eye model	Not signed
1629	Eye model	Not signed
1545	Fall apparatus	Not signed
1802	Fall machine, Atwood	Not signed
1032	Falling plate apparatus	Kohl, Max; Chemnitz
875	Faraday butterfly net	Not signed
872	Faraday cage	Not signed
2221	Faraday's cage	Not signed
2213	Faraday's rotation app.	Oechsle, C.F.; Pforzheim
72	Field book, map	Not signed
2105	Filter funnels	Not signed
1265	Filter glass	Not signed
1518	Fire engine, model	Adams, Geo.; London
752	Fire engine, model	Not signed
1519	Fire engine, model	Not signed
1363	Fire engine, model	Not signed
1055	Fire escape ladder, model	Not signed
2301	Fire syringe	Not signed
1276	Flask, chemical	Not signed
1279	Flask, glass	Not signed
1527	Flask, magic	Not signed
1277	Flasks, chemical	Not signed
1558	Flexibility of cord app.	Not signed

1366	Fountain, air pressure	Not signed
1480	Fountain, air pressure	Not signed
1532	Fountain, Heron	Not signed
1533	Fountain, Heron	Not signed
1707	Fountain, Heron	Not signed
1526	Fountain, intermittent	Not signed
1525	Fountain, syphon	Not signed
1708	Frict.electric kit	Not signed
879	Friction el. experiment	Not signed
1362	Friction in fluids	Not signed
1560	Friction machine	Montville; Copenhagen
1356	Friction machine	Not signed
1559	Friction machine, Desagul	Not signed
1529	Funnel, magic	Not signed
1268	Funnels, glass and brass	Not signed
1269	Funnels, glass	Not signed
1282	Funnels, narrow spouts	Not signed
855	Fürstenberger lamp	Not signed
854	Fürstenberger lamp	Not signed
2192	Galvanic apparatus	Not signed
2191	Galvanic apparatus	Not signed
2400	Galvanic element	Not signed
2401	Galvanic elements	Hoffmann; Reiersen; Copp.
961	Galvanometer	Hartmann & Braun; Frankfurt
1502	Galvanometer	Helweg Mikkelsen; Copenhagen
1814	Galvanometer	Klein, G.W.; Copenhagen
1204	Galvanometer,	Leeds & Northrup; Philadelphia
966	Galvanometer	Siemens & Halske; Berlin
1783	Galvanometer, astatic	Knudsen. Corn.; Copenhagen
1477	Galvanometer, astatic	Nissen, J.; Copenhagen
2216	Galvanometer, astatic	Not signed
1209	Galvanometer, Ayrton-Ma.	Paul, R.W.; London
2227	Galvanometer, capillary	Not signed
1208	Galvanometer, Duddell	Cambridge Scient. Instr. Co.
448	Galvanometer, duplex	St.N.T.S.; Copenhagen
1572	Galvanometer, education.	Weitzmann, E.; Hillerød
1206	Galvanometer, mirror	Leeds & Northrup; Philadelphia
968	Galvanometer, mirror	Not signed
1205	Galvanometer, mirror	Siemens & Halske; Berlin
1378	Galvanometer, mirror	Siemens & Halske; Berlin
983	Galvanometer, mirror	St.N.T.S.; Copenhagen
1326	Galvanometer, mov.coil	DEIF; Copenhagen
1431	Galvanometer, mov.coil	Deleuran Sophus; Aarhus
1596	Galvanometer, mov.coil	Edelmann; München
984	Galvanometer, mov.coil	Helweg-Mikkelsen; Copenhagen
1207	Galvanometer, mov.coil	Jensen, N.C.; Copenhagen
1416	Galvanometer, mov.coil	Jensen, N.C.; Copenhagen
991	Galvanometer, mov.coil	Phys.Werkstätten; Göttingen
979	Galvanometer, mov.coil	Struers; Copenhagen
980	Galvanometer, mov.iron	St.N.T.S.; Copenhagen
2222	Galvanometer, multiplier	Not signed
2217	Galvanometer, multiplier	Not signed

981	Galvanometer, multiplier	Weitzmann, C.;
954	Galvanometer, sine	Sohlberg; Copenhagen
1421	Galvanometer, tangent	Knudsen. Corn.; Copenhagen
1262	Galvanometer, tangent	Not signed
1788	Galvanometer, tangent	Not signed
2292	Galvanometer, tangent	Not signed
2228	Galvanometer, torsion	Not signed
740	Galvanometer, Weinhold's	Kohl, Max; Chemnitz
2193	Galvanoplastic medals	Not signed
947	Galvanoscope, sine	Weitzmann;
1137	Gas analysis app.	Kaeler & Martini; Berlin
1266	Gasholder, glass	Canzius; Delft
1270	Gasholder, glass, brass	Not signed
1275	Gasholders, glass, brass	Not signed
1564	Gear mechanism	Knudsen. Corn.; Copenhagen
38	Gear train	Not signed
39	Gears, meshing	Not signed
1592	Geo-magnetic inst.	Andersen & Sørensen; Copenhagen
1591	Geo-magnetic inst.	Not signed
2303	Geometrical figures	illegible
1652	Glass, coloured	Not signed
1283	Glass, mercury cleaning?	Not signed
861	Glass vessels, vacuum	Not signed
1965	Glassware, apothecary	Not signed
1095	Globe, black educational	Knudsen. Corn.; Copenhagen
484	Globe, black educational	Not signed
692	Globe, black, education.	Not signed
1246	Globe, black educational	Not signed
1772	Globe, black educational	Not signed
492	Globe, celestial	Fr. de Mongenét; Vesoul.
1892	Globe, celestial	Andersen, N./Reitzel; Copenh.
691	Globe, celestial	Andersen, N./Reitzel; Copenh.
505	Globe, celestial	Andersen, N; Copenhagen
1692	Globe, celestial	Bardin, W. & T.M.; London
501	Globe, celestial	Blaeu; Amsterdam
498	Globe, celestial	Blaeu; Amsterdam
688	Globe, celestial	Doppelmayr
325	Globe, celestial	Doppelmayr, Nuremberg
500	Globe, celestial	Dreschler; Dresden
206	Globe, celestial	Heath & Co; London
181	Globe, celestial	Hughes, H. & Son; London
719	Globe, celestial	Johnston, A.K.; Edinburgh
502	Globe, celestial, prints	Not signed
1244	Globe, celestial, glass	Not signed
507	Globe, celestial	Reimers; Berlin
496	Globe, celestial	Schotte, E.; Berlin
503	Globe, celestial	Schotte, E.; Berlin
209	Globe, celestial	Schotte, Ernst & Co; Berlin
491	Globe, celestial	Weimar
495	Globe, celestial	Åkerman; Upsala
493	Globe, Mars	Antoniadi, E.; Paris
2335	Globe, Moon	Russell; London

1693	Globe, terrestrial	Bardin, W. & T.M.; London
1680	Globe, terrestrial	Beyer, J.; Hamburg
687	Globe, terrestrial	Doppelmayr
508	Globe, terrestrial	Föld
731	Globe, terrestrial	Johnston, W. & A.K.; Edinburgh
494	Globe, terrestrial	Klinger, Joh.G.; Nuremberg
504	Globe, terrestrial	Not signed
506	Globe, terrestrial	Räth
689	Globe, terrestrial	Schotte, E.; Berlin
1681	Globes, cel. concave	Beyer, J.; Hamburg
1677	Globes, ter., cel.	Åkerman A.; Uppsala
1687	Goniometer, Wollaston	Lerebours & Secrétan; Paris
281	Graphometer	(?); Paris
566	Graphometer	Bernier; Paris
570	Graphometer	Chapotot; Paris
579	Graphometer	Fiebig; The Hague
555	Graphometer	Schört, Hans Jacob
2059	Gravity toy	I.G.N.
869	Guinea and feather exp.	Not signed
865	Guinea and feather exp.	Not signed
1305	Guinea and feather exp.	Not signed
1513	Guinea and feather exp.	Weitzmann, C.; Hillerød
2447	Gun powder proofer	Not signed
2385	Gunpowder test instr.	Not signed
2012	Gunter's chain	Not signed
151	Gunter's scale	Not signed
1324	Gyro	Newton & Co; London
1777	Gyro	Nissen, J.; Copenhagen
1798	Gyro	Not signed
1015	Gyro, Bohnenberger	Not signed
1017	Gyro, Fessel	Nissen, J.; Copenhagen
1846	Gyro, Fessel	Nissen, J.; Copenhagen
1553	Gyro, incomplete set	Nissen, J.; Copenhagen
1260	Gyro, resonance springs	Not signed
1233	Gyro, set	Nissen, J.; Copenhagen
1019	Gyro starter	Kohl, Max; Chemnitz
1036	Heat conduction app.	Knudsen. Corn.; Copenhagen
1682	Heat dilatation	Not signed
1069	Heat expansion app.	Not signed
1439	Heat expansion app.	Not signed
479	Height meter	Not signed
1755	Helioscope	Knudsen. Corn.; Copenhagen
1688	Heliostat	Not signed
1795	Heliostat	Not signed
2358	Heliostat (?)	
742	Heron's fountain	Not signed
1003	Hoist, screw	Not signed
278	Horizon dip meter	Oertling; Berlin
1045	Hot air machine	Faxe, J.; Stubbekøbing
1523	Hydraulic press, Bramah	Klein, G.W.; Copenhagen
1044	Hydraulic press	Not signed
1520	Hydraulic press, Bramah	Not signed

2280	Hydrogen lamp	Not signed
2435	Hydrom., Saccharometer	Knudsen, Corn.; Copenhagen
2436	Hydrom., Saccharometer	Not signed
2419	Hydrometer	
758	Hydrometer	Brander, G.F.; Augsburg
2132	Hydrometer	Cetti, A.; Copenhagen
2427	Hydrometer	Cetti, A.; Copenhagen
2428	Hydrometer	Cetti, A.; Copenhagen
2429	Hydrometer	Cetti, A.; Copenhagen
2430	Hydrometer	Cetti, A.; Copenhagen
1248	Hydrometer	Knudsen, Corn.; Copenhagen
2420	Hydrometer	Noor, F.W.
2421	Hydrometer	Noor, F.W.
754	Hydrometer	Not signed
2431	Hydrometer	Not signed
2434	Hydrometer	Not signed
2437	Hydrometer	Not signed
2133	Hydrometer	Scheutz, C.G.
1249	Hydrometer	Scheutz, C.G.; Copenhagen
757	Hydrometer	Struers; Copenhagen
756	Hydrometer	Struers; Copenhagen
765	Hydrometer	Sørensen, F.E.; Copenhagen
1167	Hydrometer	Weilbach, Iver C.; Copenhagen
604	Hydrometer; Clarke	Not signed
2432	Hydrometer; Kaiser	Isaacsen, R.; Copenhagen
1441	Hydrometer; lactometer	Nissen, J.; Copenhagen
761	Hydrometer model (?)	Not signed
364	Hydrometer; Nicholson	Not signed
363	Hydrometer; Nicholson	Not signed
755	Hydrometer; Nicholson	Not signed
762	Hydrometer; Nicholson	Not signed
1440	Hydrometer; Nicholson	Not signed
136	Hydrometer; salinometer	Knudsen, Corn.; Copenhagen
141	Hydrometer; salinometer	Knudsen, Corn.; Copenhagen
1928	Hydrometer; Sike	Ainsley, Th.L.; Cardiff
159	Hydrometer; Sike	Hughes & Son; London
1912	Hydrometer; Sike	Not signed
2054	Hydrometer; Sike	Not signed
374	Hydrometer; Spendrup	Nissen, J.; Copenhagen
2156	Hydrometer; Spendrup	Not signed
365	Hydrometer; Tralle	Nissen, J.; Copenhagen
2403	Hydrometers	Klint, N.H.
1247	Hydrometers	Nissen, J.; Copenhagen
770	Hydrometers	Not signed
771	Hydrometers	Not signed
773	Hydrometers	Weitzmann; Hillerød
1251	Hydrometers coll. of 10	Geissler, Greiner, Bayer.
753	Hydrometers, set	Brander (?); Augsburg
2433	Hydrometers, Spendrup	Not signed
2438	Hydrometers, Tralle	Verein d. Spir.fabrikanten;
1705	Hygrometer	Smith, Jeppe; Copenhagen
1706	Hygrometer, August	Nissen, J.; Copenhagen

1703	Hygrometer, Casbois	Renard; Copenhagen
772	Hygrometer, Daniell	Not signed
1064	Hygrometer, Daniell	Not signed
1499	Hygrometer, Daniell	Not signed
1785	Hygrometer, Daniell	Not signed
1312	Hygrometer, psychrometer	Nissen, J.; Copenhagen
1065	Hygrometer, Regnault	Weitzmann; Frederiksborg
1704	Hygrometer, Saussure	Richer; Paris
1181	Hygrometer, Saussure	Smith, Jeppe; Copenhagen
1245	Hygrometer, wet/dry bulb	Nissen, J.; Copenhagen
1159	Hygrometer, wet/dry bulb	Struers; Copenhagen
1580	Hygrometers, La Cour	Not signed
975	Incandescent bulbs	Edison (?)
1593	Inclination meter, Weber	Edelmann; München
155	Inclined plane	Not signed
21	Inclined plane	Not signed
1488	Inclined plane	Not signed
169	Indicator	Maihak, H.; Hamburg
170	Indicator	Schaeffer & Budenberg
2176	Indicator, Richard	Schaeffer & Budenberg (?)
1060	Induction apparatus	Jünger, E.; Copenhagen
1424	Induction apparatus	Nyrop, Camillus; Copenhagen
1813	Induction apparatus	Nyrop, Camillus; Copenhagen
1061	Induction coil, Ford	Ford
1342	Induction coil	Ford
929	Induction coil	Rasmussen, A.; Copenhagen
2224	Induction coil	Rasmussen, A.; Copenhagen
2225	Induction coil	Rasmussen, A.; Copenhagen
935	Induction coil, Ruhmkorff	Knudsen, Corn.; Copenhagen
976	Induction coil, Ruhmkorff	Kohl, Max; Chemnitz
1344	Induction coil, Ruhmkorff	Ruhmkorff; Paris
1225	Inductor, variable	Paul, Robert W.; London
2261	Insulating stand	Not signed
2083	Insulating stands	Not signed
2080	Insulating stands	Not signed
2079	Insulating stands	Not signed
1343	Insulating stool	Not signed
2082	Insulating stool	Not signed
977	Interrupter, mercury	Siemens & Halske; Berlin
40	Jack, model	Not signed
1272	Jar, glass and brass	Not signed
999	Joule's experiment	Gregersen, Alf.; Copenhagen
941	Jumping spiral, Roget	Not signed
1640	Kaleidoscope	Darker, C. & F.; London
829	Kaleidoscope	Knudsen, Corn.; Copenhagen
824	Kaleidoscope	Not signed
1508	Kaleidoscope	Weitzmann C.; Hillerød
825	Kaleidoscopes	Not signed
134	Kamal	Not signed
696	Knife	Treschler, C.; Dresden
1118	Kymograph	Kagenaar, D.B.; Utrecht
972	Laboratory stand	D.R.G.M.

1540	Lamp Langenbuscher	Not signed
339	Lead shots, boxwood case	Not signed
109	Leaning tower at Pisa	Not signed
1654	Lens, biconvex	Not signed
823	Lens, concave	Not signed
1253	Lens, conical glass	Not signed
1372	Lens, convex glass	Not signed
831	Lens, double convex	Not signed
786	Lens on stand	Not signed
1375	Lens, plano-convex	Duboscq, J.; Paris
827	Lens, plano-convex	Not signed
1427	Lens, plano-convex	Not signed
1426	Lens, plano-convex	Not signed
1425	Lens system	Voigtländer & Sohn; Braunsch.
1653	Lenses, collection	Not signed
745	Leslie's cube	Not signed
1884	Level, cradle	Not signed
564	Level, drainage	Not signed
562	Level, gimballed	Not signed
544	Level, gunner's	Not signed
2157	Level, mechanical	Not signed
1871	Level, mercury	Nissen, J.; Copenhagen
2052	Level, mercury	Not signed
2053	Level, mercury	Not signed
561	Level, mirror	Not signed
558	Level, Newey's pat.	Not signed
575	Level, surveyor's	Jünger, E.; Copenhagen
2334	Level, surveyor's	Jünger, E.; Copenhagen
447	Level, surveyor's	Knudsen, Corn.; Copenhagen
654	Level, surveyor's	Knudsen, Corn.; Copenhagen
458	Level, surveyor's	Not signed
573	Level, surveyor's	Not signed
1454	Level, surveyor's	Not signed
117	Level, surveyor's	Thiele, F.A.; Copenhagen
460	Level, surveyor's	Thiele, F.A.; Copenhagen
1759	Level, telescopic	Frerk, A.; Celle
1750	Level, telescopic	Jünger (?);
1729	Level, telescopic	Jünger, E.; Copenhagen
1745	Level, telescopic	Knudsen, Corn.; Copenhagen
1771	Level, telescopic	Læssøe Müller, Th.; Copenhagen
1730	Level, telescopic	Læssøe Müller, Th.; Copenhagen
1760	Level, telescopic	Nissen, J. (?);
31	Level, telescopic	Not signed
1734	Level, telescopic	Not signed
1744	Level, telescopic	Not signed
1733	Level, telescopic	Not signed
1736	Level, telescopic	Poulsen, H.; Copenhagen
2154	Level, telescopic	Thiele, F.A.; Copenhagen
1751	Level, telescopic	Troughton & Simms; London
1234	Level, water	Not signed
1544	Level, water	Not signed
1980	Level, water	Not signed

1882	Level, water	Not signed
1752	Level, Y-type	Butenschön, G.; Hamburg
1735	Level, Y-type	Ertel & Sohn; München
1749	Level, Y-type	Ertel & Sohn; München
1737	Level, Y-type	Læssøe Müller, Th.; Copenhagen
683	Level, Y-type	Not signed
1462	Level, Y-type	Not signed
1732	Level, Y-type	Not signed
1332	Leyden jar battery	Kohl, Max; Chemnitz
1330	Leyden jar battery	Not signed
1331	Leyden jar battery	Not signed
1507	Leyden jar battery	Not signed
2181	Leyden jar, condenser	Not signed
2151	Leyden jar, luminous	Not signed
2187	Leyden jar, Lane disch.	Not signed
2186	Leyden jar, Lane disch.	Not signed
2265	Leyden jar, Lane disch	Not signed
2180	Leyden jar, Cavallo	Not signed
2185	Leyden jar	Not signed
2152	Leyden jar	Not signed
2315	Leyden jar batteries	Not signed
2147	Leyden jar	Not signed
2146	Leyden jar	Not signed
2137	Leyden jar	Not signed
2144	Leyden jar	Not signed
2145	Leyden jar	Not signed
2276	Leyden jar	Not signed
1473	Leyden jar	Weitzmann, C.; Copenhagen
489	Leyden jars	Not signed
917	Leyden jars	Not signed
912	Leyden jars	Not signed
2148	Leyden jars	Not signed
2153	Leyden jars, series con.	Not signed
2271	Lightning demonstration	Not signed
914	Lightning panel	Not signed
911	Lightning panel	Not signed
913	Lightning panel	Not signed
915	Lightning panel, sphere	Not signed
2092	Lightning panel	Not signed
2293	Lightning panel	Not signed
2102	Lightning panels	Not signed
2294	Lightning tube	Not signed
2202	Lodestone	Le Maire & fils; Paris
436	Lodestone	Not signed
1264	Lodestone	Not signed
396	Log, electric	Gentas; Copenhagen
395	Log, mechanical taffrail	Gentas; Copenhagen
717	Log, mechanical taffrail	Gentas; Copenhagen
394	Log, mechanical taffrail	Haecke, H.; Berlin
388	Log, mechanical taffrail	Not signed
393	Log, mechanical taffrail	Undén, C.G.; Elsinore
718	Log, mechanical	Undén; Elsinore

215	Log, mechanical	Walker's Cherub
1087	Log, mechanical	Walker's Harpoon; London
1088	Log, mechanical	Walker's Neptune; London
139	Log ship	Not signed
137	Log ship	Not signed
802	Log ship and reel	Not signed
1093	Log ship	Not signed
1940	Log ships	Not signed
175	Log, Walker's 'Harpoon'	Walker, T.; London
716	Log, Walker's 'Harpoon'	Walker, T.; London
114	Log, Walker's cherub	Walker, Thos. & Son; Birmingham
384	Log, Walker's 'Harpoon'	Walker, T.; London
186	Log, Walker's 'Cherub'	Walker's Cherub
1013	Looping track	Weitzmann
1318	Loudspeaker, dynamic	Knudsen, L.; Copenhagen
478	Lunarium	Not signed
867	Magdeburg hemispheres	Hering, Carl; Auerbach
866	Magdeburg hemispheres	Not signed
1043	Magdeburg hemispheres	Not signed
1194	Magdeburg hemispheres	Not signed
1493	Magdeburg hemispheres	Not signed
464	Magic cup	Not signed
856	Magnesium lamp (?)	Not signed
1158	Magnet	Not signed
2203	Magnet, leather bound	Not signed
672	Magnet ore	Not signed
669	Magnet, permanent	Not signed
668	Magnet, permanent	Not signed
667	Magnet, permanent	Not signed
2287	Magnet, rotating	Not signed
675	Magnetic experiment	Knudsen, Corn.; Copenhagen
943	Magnetic field demonstr.	Struers; Copenhagen
948	Magnetic fields exp.	Struers; Copenhagen
2209	Magnetic toy	Not signed
2045	Magneto-electric machine	Holten Worsøe, Aalborg
1423	Magneto-electric machine	Not signed
1433	Magneto-electric machine	Not signed
2072	Magneto-electric machine	Not signed
1586	Magnetometer	Klein, G.W.; Copenhagen
1590	Magnetometer, QHM	Not signed
1578	Magnetometer, variometer	Not signed
1172	Magnets, bar	Weilbach, Iohann Philip; Cop.
673	Magnets, educational	Not signed
1465	Magnets, permanent	Sanderson Brothers
2208	Magnets, set of two	Not signed
2207	Magnets, set of 12	Le Maire & Fils; Paris
670	Magnets, set	Not signed
671	Magnets, set	Not signed
2387	Magnifier	Not signed
2380	Magnifier, reading app.	Not signed
465	Manometer, Guericke's	Not signed
1498	Manometer, v.Guericke	Not signed

1917	Map, stellar	Not signed
2341	Measure, calibre	Not signed
1568	Measure, cube	Not signed
1569	Measure, cube	Not signed
2179	Measure, hawser diam.	Not signed
2163	Measure, internal length	Not signed
596	Measure, length	Not signed
590	Measure, length, ell	Not signed
591	Measure, length, ell	Not signed
1145	Measure, length	Not signed
1978	Measure, length	Not signed
1979	Measure, length	Not signed
2112	Measure, length	Not signed
2113	Measure, length	Not signed
2177	Measure, length	Not signed
2114	Measure, length	Not signed
2357	Measure, length	Not signed
2339	Measure, length	Not signed
2240	Measure, length	Not signed
2241	Measure, length	Not signed
2168	Measure, length	Sampson Aston; Birmingham
13	Measure, shoemaker's	Preston, E. & Sons; Birmingham
2115	Measure, slide gauge	Not signed
1874	Measure, standard length	Fennel, Otto; Cassel
1873	Measure, standard length	Jünger, E.; Copenhagen
1875	Measure, standard length	Knudsen, Corn.; Copenhagen
594	Measure, standard fod	Poulsen, H.; Copenhagen
2064	Measure, volume	Bunzen, L.; Copenhagen
2395	Measure, volume, Rømer	C5 M
2029	Measure, volume	Glud og Marstrand; Copenh.
1115	Measure, volume	M (for Ole Rømer); Copenhagen
54	Measure, volume	Not signed
53	Measure, volume	Not signed
52	Measure, volume	Not signed
15	Measure, volume	Not signed
59	Measure, volume	Not signed
1617	Measure, volume	Not signed
1618	Measure, volume	Not signed
2028	Measure, volume	Not signed
2021	Measure, volume	Not signed
2030	Measure, volume	Not signed
2023	Measure, volume	Not signed
1987	Measure, volume	Not signed
2020	Measure, volume	Not signed
2022	Measure, volume	Not signed
2019	Measure, volume	Not signed
1985	Measure, volume	Not signed
2026	Measure, volume	Not signed
1984	Measure, volume	Not signed
2027	Measure, volume	Not signed
2042	Measure, volume	Not signed
2123	Measure, volume	Not signed

2122	Measure, volume	Not signed
2127	Measures, grain volume	Not signed
2316	Measures, length	Klein, G.W.; Copenhagen
2317	Measures, length	Klein, G.W.; Copenhagen
12	Measures, length	Levison, L.; Copenhagen
1613	Measures, length	Not signed
2017	Measures, length	Not signed
2120	Measures, length	Not signed
2394	Measures, length	Not signed
1968	Measures, length	Schwartz & Søn; Copenhagen
1415	Measures, std. length	Not signed
2126	Measures, volume	Buntzen; A.
1062	Measures, volume	Not signed
2025	Measures, volume	Not signed
1986	Measures, volume	Not signed
2024	Measures, volume	Not signed
2116	Measures, volume	Not signed
2125	Measures, volume	Not signed
2065	Measures, volume	Not signed
2121	Measures, volume	Not signed
2124	Measures, volume	Not signed
1886	Measuring tape	Chesterman; Sheffield
11	Measuring tape	Marcus, Fr.; Stockholm
22	Mechanical powers	Bidstrup, J.; London
292	Megaphone	Not signed
1623	Megaphone	Not signed
2140	Melting iron by electr.	Not signed
97	Meshing bevel wheels	Not signed
1297	Metal-acid reaction app.	Not signed
2044	Meter, length measure	Not signed
1400	Micromanometer, Prytz	Not signed
679	Micrometer, astronomical	Not signed
921	Microphone	Not signed
2416	Microscope	
1626	Microscope	Bidstrup, Jesper
463	Microscope	Chevalier, Ch.; Paris
456	Microscope	Chevalier, Ch.; Paris
457	Microscope	Leitz; Wetzlar
1417	Microscope	Not signed
2111	Microscope	Seibert
454	Microscope, chest	Nairne, E.; London
488	Microscope, compound	Bardou, A.; Paris
547	Microscope, compound	Cuff; London
795	Microscope, compound	Holst, H.E.; Copenhagen
791	Microscope, compound	Leitz; Wetzlar
792	Microscope, compound	Not signed
796	Microscope, compound	Not signed
1380	Microscope, compound	Zeiss, Carl; Jena
794	Microscope, Cuff	Not signed
455	Microscope, Cuff type	Ring; Berlin
509	Microscope, culpeper	Dollond, London
1056	Microscope, Culpeper	Bastholm, N; Copenhagen

1057	Microscope, Culpeper	Bastholm, N; Copenhagen
1686	Microscope, lucernal	Not signed
1058	Microscope, lucernal	Smith, Jeppe; Copenhagen
1231	Microscope, polarizing	Zeiss; Jena
546	Microscope, screw barrel	Cuff; London
545	Microscope, screw barrel	Not signed
790	Microscope, simple	Watkins, Fr.; London
459	Microscope, solar	Dollond; London
797	Microscope, solar	Dollond; London
957	Milliammeter	Not signed
960	Milliammeter	Rasmussen E.G. (?); Copenhagen
1422	Milliamp- & voltmeter	Helweg Mikkelsen; Copenhagen
950	Millivolt- and Ammeter	Nadir; Berlin
962	Millivoltmeter	Weston; Berlin
1199	Millivoltmeter	Weston; Berlin
1643	Mirror, anamorph. drgs.	Burucker, I.M.
804	Mirror, azimuth	Knudsen. Corn.; Copenhagen
1930	Mirror, azimuth	Knudsen. Corn.; Copenhagen
789	Mirror, concave	Not signed
1637	Mirror, concave	Not signed
1636	Mirror, concave	Not signed
1639	Mirror, concave	Not signed
1645	Mirror, conical; drgs.	Vind, Aug.
1153	Mirror control instr.	Plath, C.; Hamburg
1641	Mirror, convex	Not signed
1642	Mirror, cylindrical	Not signed
1377	Mirror, metal	Not signed
1644	Mirror, prismatic; drgs.	Not signed
1635	Mirror, pyramidal	Not signed
833	Mirror, rotating	Not signed
1314	Mirror, rotating	Weitzmann, Erik; Hillerød
1896	Mirrors, angled	Knudsen. Corn.; Copenhagen
1627	Mirrors, angled	Not signed
1862	Mirrors, angled	Not signed
1124	Mnemometer	Zimmermann, E.; Leipzig
1638	Model, mirror projection	Not signed
2296	Model, tin mine	Not signed
939	Morse key	Not signed
1101	Morse receiver	Andersen, Evald; Copenhagen
1104	Morse receiver	Andersen, Evald; Copenhagen
1102	Morse receiver	Digney Frères
487	Morse receiver	Digney Frères; Paris
2278	Morse receiver	Jünger, E.; Copenhagen
1491	Morse receiver	Siemens & Halske, Berlin
1117	Morse receiver	Siemens & Halske; Berlin
1072	Morse receiver	Siemens & Halske; Berlin
2277	Morse receiver	Siemens & Halske; Berlin
1103	Morse receiver	St.N.T.S.; Copenhagen
922	Morse receiver	St.N.T.S.; Copenhagen
1512	Morse receiver	Weitzmann, C.; Hillerød
1941	Morse signal lamp	Not signed
1038	Morse telegraph	Not signed

1977	Morse transm. and rec.	Digney Frères
2099	Multiplier, Bennett's	Nairne, E.; London
2098	Multiplier, Cavallo's	Not signed
372	Navigation educat.instr	Not signed
1647	Newton's prism experim.	Not signed
2196	Nobili's rings apparatus	Not signed
725	Nocturnal	Tremeschini; Paris
335	Nocturnal, repr.	Jensen, Jens Kusk; Denmark
581	Octant	Adams(?)
319	Octant	Ainsley; South Shields
232	Octant	Berry & Sons; Hartlepool
238	Octant	Campbell, W. & Co, Hamburg
822	Octant	Clephin, I.; London
227	Octant	Cohen; Newcastle
582	Octant	Culmer & Tennant; London
1970	Octant	Culmer; London
300	Octant	de Kemel, Charles; Antwerp
146	Octant	Dollond London
236	Octant	Dollond London
1675	Octant	Dollond London
4	Octant	Du Bois, A.; Antwerp
2160	Octant	Callaghan; London
240	Octant	Harrison; Hull
241	Octant	Heath; Devonport
231	Octant	Heilbuth, London
2159	Octant	Heilbuth, S.; London
245	Octant	Helt, Lars; Bergen
1973	Octant	Hicks, T.; Dublin
222	Octant	Jeffrey, John; Bo'ness
5	Octant	Lundy, J.F.; Grimsby
1949	Octant	Matheson & Co; Leith
173	Octant	McMillan & Talbot; London
1974	Octant	Nairne, E.; London
7	Octant	Not signed
9	Octant	Not signed
8	Octant	Not signed
242	Octant	Not signed
243	Octant	Not signed
320	Octant	Not signed
223	Octant	Not signed
228	Octant	Not signed
229	Octant	Not signed
584	Octant	Not signed
583	Octant	Not signed
1434	Octant	Not signed
1976	Octant	Not signed
1975	Octant	Not signed
1913	Octant	Not signed
1942	Octant	Not signed
1899	Octant	Not signed
1935	Octant	Not signed
1932	Octant	Not signed

1972	Octant	Not signed
1944	Octant	Not signed
1897	Octant	Not signed
2	Octant	Parnell; London
220	Octant	Petersen, W.; Copenhagen
580	Octant	Plath, C.; Hamburg
230	Octant	Smith & Hind; Hartlepool
6	Octant	Spencer, Browning & Co; London
224	Octant	Spencer Browning & Rust; London
221	Octant	Spencer Browning & Rust; London
237	Octant	Spencer Browning & Rust; London
233	Octant	Spencer Browning & Rust; London
587	Octant	Spencer Browning & Rust; London
720	Octant	Spencer Browning & Rust; London
1920	Octant	Spencer Browning & Rust; London
1971	Octant	Spencer Browning & Rust; London
1948	Octant	Spencer Browning & Rust; London
225	Octant	Stalker, D.; Leith
234	Octant	Troughton; London
244	Octant	Urings, I.; London
235	Octant	Willemsz, Cornelis jun; Föhr
239	Octant	Wolckerts, H.
565	Octant, artillery	Not signed
1950	Octant, siamese(?)	Not signed
308	Oil lamp in gimbals	Not signed
1810	Ophthalmometer	Goubeadec (?); Paris
1646	Optical toy	Not signed
1840	Ordinatograph	Not signed
694	Ordnance gauge	Treschler, C.; Dresden
695	Ordnance gauge	Treschler, C.; Dresden
1133	Organ	Not signed
1257	Organ model	Not signed
2307	Organ, model	Not signed
837	Organ pipe	Not signed
836	Organ pipe	Not signed
842	Organ pipes	Not signed
661	Orrery	Not signed
183	Orrery	Parkes & Hadley's
1854	Oscilloscope	Not signed
1337	Oscilloscope tube	Müller, Rich.; Braunschweig
2441	Pace measure	Not signed
647	Pantograph	Not signed
1235	Pantograph	Not signed
617	Pantograph	Sneewins, Henriques; Leyden
616	Pantograph	Sneewins, Henriques; Leyden
1550	Parabolic trajectory	Not signed
1548	Parabolic trajectory	Not signed
1549	Parabolic trajectory	Not signed
817	Parallel rule	Heath & Co; London
149	Parallel rule	Not signed
147	Parallel rule	Not signed
806	Parallel rule	Not signed

1911	Parallel rule	Not signed
1923	Parallel rule	Not signed
41	Parallelogram of forces	Not signed
1020	Parallelogram of forces	Not signed
341	Pascal's vases	Not signed
340	Pascal's vases	Not signed
763	Pascal's vases	Not signed
764	Pascal's vases	Not signed
1068	Pascal's vases	Not signed
1496	Pascal's vases	Not signed
1482	Pascal's vases	Not signed
70	Pedometer	Not signed
95	Pedometer	Spencer & Perkins; London
1554	Pendulum	Oechsle. C.F.; Pforzheim
1555	Pendulum clock movement	Not signed
1022	Pendulum clock	Weitzmann; Hillerød
1014	Pendulum, compound	Not signed
1041	Pendulum, conical	Not signed
2106	Percolator	Not signed
1024	Percussion apparatus	Not signed
1842	Percussion apparatus	Not signed
19	Percussion board	Not signed
108	Percussion pendulum	Not signed
1189	Percussion table	Not signed
1040	Percussions apparatus	Not signed
2107	Pharmaceutical chest	Not signed
1436	Phonic wheel, La Cour	Jürgensen, C.P.; Copenhagen
1452	Phonic wheel	Jürgensen, C.P.; Copenhagen
1451	Phonic wheel	Jürgensen, C.P.; Copenhagen
2374	Phonograph, electromagn.	Dansk Fonograf Magasin; Copenh.
923	Phonograph, electromagn.	Dansk Telegrafonfabric; Copenh.
1486	Phonograph	Not signed
1322	Phonograph	The Graphophone
1811	Photometer	Knudsen. Corn.; Copenhagen
1130	Photometer, flicker	Wright, Alex.; Westminster
337	Piezometer, Ørsted's	Not signed
744	Piezometer, Ørsted's	Not signed
1506	Piezometer, Ørsted's	Not signed
1469	Piezometer, Ørsted's	Not signed
1778	Piezometer, Ørsted's	Not signed
1274	Pipette	Not signed
1963	Pipette	Not signed
2373	Pipette, glass	Not signed
1676	Planetarium	Not signed
49	Planetarium, Rømer's	Thuret, J.; Paris
1866	Planimeter	Amsler, J.; Schaffhausen
1825	Planimeter	Ausfeld, H.; Gotha
1865	Planimeter	Coradi, G.; Zürich
1827	Planimeter	Coradi, G.; Zürich
1829	Planimeter	Coradi, G.; Zürich
1864	Planimeter	Coradi, G.; Zürich
1869	Planimeter	Knudsen. Corn.; Copenhagen

1828	Planimeter	Sundby, O.; Copenhagen
1867	Planimeter, polar	Amsler, J.; Schaffhausen
1826	Planimeter, polar	Amsler; Schaffhausen
1870	Planimeter, polar	Bøgh, A.; Denmark
556	Planimeter(?)	Otz; Berne
1353	Plateau apparatus	Not signed
303	Plateau's wire figures	Not signed
251	Plow, quadrant (repr.)	Jensen, Jens Kusk; Denmark
2275	Point discharge exp.	Not signed
1838	Point marking instr.	Not signed
1584	Polarimeter	Duboscq J.; Paris
1401	Polariscope, Nörrenberg	Knudsen. Corn.; Copenhagen
1853	Polariscope, Nörrenberg	Knudsen. Corn.; Copenhagen
1690	Polariscope, Nörrenberg	Duboscq, J.; Paris
1691	Polarization, Fresnel	Not signed
967	Polarization objects	Not signed
1633	Polemoscope	Not signed
1634	Polemoscope	Not signed
2406	Potentiometer	Jensen, N.C.; Copenhagen
1008	Press, mechanical	Not signed
1007	Press, mechanical	Not signed
171	Pressure gauge, test	F.L.D.
751	Pressure gauge	Knudsen. Corn.; Copenhagen
1780	Pressure gauge	Schlüter, C.F.; Copenhagen
1648	Prism	Not signed
1651	Prism	Not signed
1649	Prism	Not signed
1650	Prism	Not signed
1376	Prism and lens, stand	Duboscq-Soleil; Paris
1371	Prism, glass	Not signed
785	Prism on stand	Not signed
787	Prisms on stands	Not signed
1446	Projectile trolley	Not signed
1547	Projectile trolley	Not signed
848	Projector, film	Not signed
847	Projector, film	Not signed
1195	Propeller, air friction	Not signed
126	Protractor	Klein, G.W.; Copenhagen
812	Protractor	Knudsen. Corn.; Copenhagen
557	Protractor	Lund & Engelsted; Copenhagen
370	Protractor	Not signed
602	Protractor	Not signed
603	Protractor	Not signed
1836	Protractor	Not signed
1924	Protractor	Not signed
2350	Protractor	Not signed
2356	Protractor	Smith, Jeppe; Copenhagen
2351	Protractor	Troughton & Simms; London
418	Protractor	Troughton; London
1834	Protractor, circular	Knudsen. Corn.; Copenhagen
1835	Protractor, circular	Not signed
571	Protractor, Douglas	Not signed

1837	Protractor, Douglas	Not signed
2332	Protractor, Douglas	Smith, Jeppe; Copenh.
1831	Protractor, Douglas	Sundby, O.; Copenhagen
1833	Protractors	Not signed
191	Psychrometer	Fuess, R.; Berlin
98	Pulley frame	Bidstrup, J.; London
92	Pulley frame	Not signed
1025	Pulley frame	Not signed
93	Pulley stand	Not signed
287	Pulley stand	Not signed
1361	Pump, pressure	Not signed
1360	Pump, pressure	Not signed
1359	Pump, suction	Not signed
1105	Punched card machine	Great Northern Tel.; Copenhagen
304	Puppet, balancing	Not signed
309	Puppets desc. stairs	Not signed
1006	Puppets descend stairs	Not signed
1250	Pyknometer	Geissler, Ch.F.; Berlin
322	Pyrometer, Daniell	Baker, C; London
1683	Pyrometer, dilatation	Not signed
1685	Pyrometer, Wedgwood	Not signed
2230	Quadrant	Busch, Johannes; Copenhagen
285	Quadrant	Butenschön, Georg; Hamburg
2348	Quadrant	Hahn, A. & R.; Cassel
252	Quadrant	Jensen, Jens Kusk; Denmark
265	Quadrant	Jünger, E.; Copenhagen
682	Quadrant	Not signed
2364	Quadrant	Not signed
585	Quadrant	Schillem
2346	Quadrant	Smith, Jeppe; Copenh.
1664	Quadrant	Smith, Jeppe; Copenhagen
1674	Quadrant, artillery	Adams, G.; London
1672	Quadrant, artillery	Baradelle Fils; Paris
572	Quadrant, artillery	H.E.
130	Quadrant, artillery	Kaijser, D.; Frederiksværk Denm.
2340	Quadrant, artillery	Kaysser, D.; Frederiksværk
129	Quadrant, artillery	Not signed
132	Quadrant, artillery	Not signed
1419	Quadrant, astrolabe	Hartmann, Georg
652	Quadrant, astronomical	Ahl, Joh.; Copenhagen
124	Quadrant, Gunter	Sutton, H.; London
1673	Quadrant, universal	Baradelle fils; Paris
1173	Quintant	Plath, C.; Hamburg
323	Quintant	Schmalcalder; London
1109	Radio receiver	Dansk Telegr.fabr.; Copenhagen
1052	Radio transm. and rec.	Leybold; Cologne
807	Radiograph	Hughes, H.; London
1333	Radiometer, heated	Not signed
1150	Range finder	Cooke, T. & Sons; London, York
2368	Range finder	Holst, H.E.; Copenhagen
1147	Range finder	Hughes, H. & Son; London
1997	Range finder	Not signed

1151	Rangefinder	Watts, E.R. & Son; London
160	Rangefinder	Hughes & Son; London
192	Rangefinder	Hughes, H. & Son; London
261	Rangefinder	Hurliman, A.; Paris
262	Rangefinder	Hurliman, A.; Paris
106	Rangefinder	Not signed
193	Rangefinder	Not signed
553	Rangefinder	Not signed
214	Rangefinder, stadimeter	Hurliman, A.; Paris
1557	Rebound trajectory	Not signed
1213	Recorder, electronic	Leeds & Northrup; Philadelphia
973	Rectifying valve	Newton & Wright
1929	Reel for log line	Not signed
586	Reflecting circle, Borda	Gambey; Paris
279	Reflecting circle	Jecker; Paris
299	Reflecting circle	Klein, G.W.; Copenhagen
550	Reflecting circle	Knudsen, Corn.; Copenhagen
282	Reflecting circle	Lenoir; Paris
560	Reflecting circle	Lund & Engelsted; Copenhagen
274	Reflecting circle	Not signed
273	Reflecting circle	Petersen, W.; Copenhagen
30	Reflecting circle	Pistor & Martins; Berlin
283	Reflecting circle	Pistor & Martins; Berlin
280	Reflecting circle	Pistor & Martins; Berlin
176	Reflecting circle	Pistor & Martins; Berlin
276	Reflecting circle	Pistor & Martins; Berlin
277	Reflecting circle	Pistor & Martins; Berlin
721	Reflecting circle, Borda	Secretan; Paris
788	Reflection experiment	Knudsen, Corn.; Copenhagen
1373	Refracting index app.	Not signed
1252	Refraction apparatus	Not signed
798	Refraction experiment	Knudsen, Corn.; Copenhagen
1230	Refractometer, Abbe's	Fuess; Berlin
1232	Refractometer, Abbe's	Jena
1385	Refractometer, Pulfrich	Woltz, Max; Bonn
1384	Refractometer, Tulley's	Fuess; Berlin
946	Relay	Knudsen, Corn.; Copenhagen
949	Relay	Not signed
945	Relay	Not signed
1448	Relay, La Cour's key	Askov; Vejen
1458	Relay, La Cour's key	Description
1449	Relay, La Cour's key	Not signed
2412	Resistance, adjustable	Weitzmann, E.; Hillerød
486	Resistance box	Gebr. Ruhstrah; Göttingen
2220	Resistance box	Gebr. Ruhstrat; Göttingen
1217	Resistance box	Jensen, N.C.; Copenhagen
1226	Resistance box	Jensen, N.C.; Copenhagen
1845	Resistance box	Knudsen, Corn.; Copenhagen
951	Resistance box	Not signed
2219	Resistance box	Siemens & Halske; Berlin
1504	Resistance box	Weitzmann, C.; Hillerød
1503	Resistance box	Weitzmann, C.; Hillerød

2218	Resistance box	Weitzmann, C.; Hillerød
1220	Resistance boxes	Jensen, N.C.; Copenhagen
1390	Resistance, dial	Jensen, N.C.; Copenhagen
1389	Resistance, dial	Jensen, N.C.; Copenhagen
1219	Resistance, standard	Jensen, N.C.; Copenhagen
1388	Resistance, standard	Jensen, N.C.; Copenhagen
1218	Resistance, standard	Wolff, O.; Berlin
955	Resistance, variable	Not signed
1135	Resistor, variable	Cameron; Chicago
839	Resonance bowl	Not signed
1259	Resonators	Not signed
835	Resonators, Helmholtz	Not signed
1280	Retort, glass	Not signed
2103	Retorts, glass	Not signed
938	Reversing switch	Not signed
1018	Revolution counter	Not signed
1494	Revolution counter	Not signed
1107	Rheostat	Marconi's Wireless; London
2215	Rheostat, Wheatstone's	Not signed
1620	Roller bearing	Not signed
940	Rotating conductor	Not signed
1238	Rotating mirror	Jünger, E.; Copenhagen
988	Rotation app. Geissler	Not signed
992	Rotation app., Feddersen	Weitzmann, C.; Hillerød
1000	Rotation apparatus	Not signed
998	Rotation apparatus	Not signed
1029	Rotation apparatus	Not signed
1016	Rotation apparatus	Struers; Copenhagen
1033	Rotation apparatus	Struers; Copenhagen
1066	Rotation apparatus	Weitzmann, C.; Hillerød
1843	Rotation apparatus	Weitzmann(?); Hillerød
1858	Rule	Dennert & Pape; Altona
1859	Rule	Fennel; Cassel
816	Rule	Not signed
1857	Rule	Not signed
2167	Rule	Petersen, L.; Copenhagen
1860	Rule	Smith; Copenhagen
1856	Rule	Sundby, O.; Copenhagen
1890	Rule	Sundby, O.; Copenhagen
57	Rule, Danish ell	Not signed
1166	Rule, rolling parallel	U.W.W.; Birmingham
600	Rule, folding	Not signed
2169	Rule	Not signed
1382	Saccharimeter	Bellingham & Stanley; London
1381	Saccharimeter	Duboscq, J.; Paris
1420	Saccharimeter	Reichert, C.; Vienna
480	Saccharimeter	Schmidt & Haensch; Berlin
1782	Saccharimeter	Schmidt & Haensch; Berlin
125	Salinometer	Fricake & Sons; London
148	Sandglass	Not signed
177	Sandglass	Not signed
174	Sandglass	Not signed

1161	Sandglass	Not signed
2048	Sandglass	Not signed
2049	Sandglass	Not signed
723	Sand sieve box	Not signed
390	Sandglass	Knudsen, Corn.; Copenhagen
46	Sandglass	Not signed
81	Sandglass	Not signed
389	Sandglass	Not signed
386	Sandglass	Not signed
385	Sandglass	Not signed
387	Sandglass	Not signed
537	Sandglass	Not signed
541	Sandglass	Not signed
715	Sandglass	Not signed
727	Sandglass	Not signed
728	Sandglass	Not signed
714	Sandglass	Not signed
1964	Sandglass	Not signed
2397	Sandglass	Not signed
2391	Sandglass	Not signed
2379	Sandglass	Not signed
2386	Sandglass	Not signed
63	Sandglass, silver stand	Not signed
64	Sandglass, silver stand	Not signed
61	Sandglasses, four	Not signed
80	Sandglasses, four	Not signed
2309	Savart's bell	Not signed
678	Savart's machine	Not signed
2306	Savart's machine	Nissen, J.; Copenhagen
1981	Scale	Weber, J.
1614	Scale, bow spring	Not signed
2033	Scale, bow spring	Not signed
595	Scale, chinese	Not signed
597	Scale, plotting	Hansen, J.E.T.
598	Scale plotting	Smith; Copenhagen
2415	Scale rule	Mandern, Carl v.; Copenhagen
2322	Scale rules	Adrian;
2322	Scale rules	Jünger, E.; Copenhagen
1918	Scales	Ulrich, A.; Danzig
599	Scales, plotting	Not signed
592	Scales, plotting	Not signed
593	Scales, plotting	Smith; Copenhagen
1628	Screen	Not signed
1632	Screen, red and blue ap.	Not signed
1631	Screen with apertures	Not signed
1630	Screens for optic exp.	Not signed
25	Screw and nut, model	Not signed
24	Screw model	Not signed
1489	Screw press, model	Not signed
391	Seaman's snuff box	Not signed
392	Seaman's snuff box	Not signed
614	Sector	Acker; Emmishofen

613	Sector	Gaedde, E.I.
611	Sector	Not signed
610	Sector	Not signed
2243	Sector	Pindar, Johannes
612	Sector	Whitwell, C.
2338	Sector, artillery	Not signed
2337	Sector, artillery	Not signed
1394	Self-induction coil	Jensen, N.C.; Copenhagen
1395	Self-induction coil	Jensen, N.C.; Copenhagen
1396	Self-induction, standard	Jensen, N.C.; Copenhagen
1281	Separating funnels	Not signed
1612	Set square	Jensen, P.; Denmark
321	Sextant	Archbutt, J. & W.E.; London
1830	Sextant	Breithaupt, F.W.; Cassel
112	Sextant	Cail, S.H.; Newcastle
676	Sextant	Cutts; Sheffield
142	Sextant	Dollond London
113	Sextant	Feathers, P.A.; Dundee
179	Sextant	Haecke, H.; Neukölln
3	Sextant	Hilger & Watts; London
199	Sextant	Hughes, H. & Son; London
266	Sextant	Hughes, H. & Son; London
1165	Sextant	Kirkeby, L.; Copenhagen
111	Sextant	Klausen(?), F.L.; Copenhagen
1317	Sextant	Knudsen, Corn.; Copenhagen
1900	Sextant	Knudsen, Corn.; Copenhagen
1947	Sextant	Knudsen, Corn.; Copenhagen
138	Sextant	Not signed
2161	Sextant	Petersen, Martin; Svendborg
2171	Sextant	Petersen, Martin; Svendborg
198	Sextant	Plath, C.; Hamburg
1096	Sextant	Plath, C.; Hamburg
226	Sextant	Schutz, W.; Copenhagen
172	Sextant	Smith, Jeppe; Copenh
217	Sextant	Smith, Jeppe; Copenhagen
722	Sextant	Smith, Jeppe; Copenhagen
1501	Sextant	Smith, Jeppe; Copenhagen
268	Sextant	Spindler & Hoyer; Göttingen
263	Sextant	Troughton & Simms; London
1868	Sextant	Troughton & Simms; London
127	Sextant	Troughton; London
588	Sextant	Troughton; London
1148	Sextant	Weilbach, Iver C.; Copenhagen
267	Sextant	Weirhert(?), W.; Cardiff
264	Sextant, aviation	Link Aviation Divices Inc
813	Sextant, box	Lerebours & Secretan; Paris
1895	Shadow pin, gnomon	Keiki Seizo Ltd; Tokyo
1046	Ship's propeller	Not signed
1210	Shunt, universal	Jensen, N.C.; Copenhagen
412	Sighting vane	Not signed
414	Sighting vane	Not signed
413	Sighting vane	Not signed

1608	Silk winder	Not signed
1565	Singing flame apparatus	Not signed
1313	Siren	Not signed
1485	Siren	Not signed
1255	Siren	Pixii Pere et Fils; Paris
1844	Siren, Caignard de Lat.	Not signed
834	Siren, de Latour	Hofmann; Paris
858	Slide rule	Darmstadt
859	Slide rule	Not signed
2320	Slide rule	Not signed
1163	Slide rule, calculator	Thornton A.C.; England
1621	Sonometer	Not signed
1622	Sonometer	Not signed
1447	Sonometer	Weitzmann, C.; Frederiksborg
1127	Sound key, Cattel	Not signed
1129	Sound pendulum	Zimmermann, E.; Leipzig
908	Spark gap with candle	Not signed
1402	Spectrograph, quartz	Duboscq, J.; Paris
1383	Spectrometer	Schmidt & Haensch; Berlin
1386	Spectrometer	Schmidt & Haensch; Berlin
1374	Spectrometer, portable	Heele, Hans; Berlin
846	Spectrosc. apparatus	Not signed
844	Spectroscope	Heele, H.; Berlin
1800	Spectroscope	Knudsen. Corn.; Copenhagen
1801	Spectroscope	Krüss, A.; Hamburg
845	Spectroscope	Not signed
1071	Spectroscope	Not signed
1577	Spectroscope	Toepfer, O.; Potsdam
843	Spectroscope, direct v.	Hofmann; Paris
1119	Spectroscope, direct v.	Krüss, A.; Hamburg
1319	Spectroscope, prismatic	Not signed
1583	Spectroscopes, La Cour	Not signed
1271	Sphere, glass	Not signed
26	Spherometer	Not signed
793	Spherometer	Smith, Jeppe; Copenh
996	Spirit lamp, gimballed	Not signed
1379	Spirit level tester	Cambridge Scientific Instr.
1258	Sprinkler, lycopodium	Not signed
120	Stadimeter, Fisk type	
314	Stand for balance	Not signed
1254	Stand, laboratory	Not signed
2295	Stand with glass hooks	Not signed
187	Star finder	US Naval Ocean. Off.
2170	Station pointer	Hallgren's Eftf.; Copenhagen
164	Station pointer	Hughes & Son; London
2352	Station pointer	Kirkeby, L.; Copenhagen
1893	Station pointer	Knudsen. Corn.; Copenhagen
218	Station pointer	Lindblad, A.; Stockholm
185	Station pointer	Not signed
2354	Station pointer	Not signed
2353	Station pointer	Not signed
184	Station pointer	Sprenger, Ed.; Berlin

819	Station pointer	Troughton & Simms; London
1852	Steam cylinder, section	Not signed
1009	Steam engine	Not signed
1047	Steam engine	Not signed
1481	Steam engine	Not signed
1570	Steam engine	Not signed
1700	Steam engine, Savery's	Not signed
1701	Steam engine, Watt's	Not signed
1799	Steam engine	Not signed
2286	Steam engine, wood model	Not signed
2297	Steam engine	Not signed
2308	Steam engine, Watt's	Not signed
736	Steam engine, sundriven	Phywe; Cologne
1063	Steam engine	Weitzmann, C.; Hillerød
1849	Steam engine, model	Weitzmann; Hillerød
1907	Steering machine, model	Andersen, V.; Copenhagen
589	Steelyard	Not signed
2037	Steelyard	Not signed
1988	Steelyard	Not signed
2128	Steelyard	Not signed
828	Stereoscope	Not signed
116	Stick, walking	Not signed
381	Storm glass	Not signed
810	Storm glass	Not signed
1346	Sturgeon's disc	Newman, I.; London
2423	Sundial	
2424	Sundial	
119	Sundial	Frommüller, Christoff
1188	Sundial	L. Schou, Will. Nielsen
533	Sundial, Butterfield	Butterfield; Paris
2247	Sundial, Butterfield	Delure; Paris
660	Sundial, cannon	Møller, C.; Copenhagen
328	Sundial, cubic	Not signed
2234	Sundial, equatorial	Martin, Johan; Augsburg
2246	Sundial, equatorial	Müller, L.T.; Augsburg
724	Sundial, equinoctial	Hanneus, J.D.; Meldorff
532	Sundial, equinoctial	Le Maire & Fils; Paris
536	Sundial, equinoctial	Messter, Ed.; Berlin
529	Sundial, equinoctial	Müller, L.T.; Augsburg
662	Sundial, equinoctial	Müller, L.T.; Augsburg
2117	Sundial, equinoctial	Not signed
2237	Sundial, equinoctial	Not signed
2118	Sundial, horizontal	N.L.V.
535	Sundial, horizontal	Not signed
534	Sundial, horizontal	Not signed
2119	Sundial, horizontal	Not signed
2399	Sundial, horizontal	Not signed
531	Sundial, horizontal	Pierret; Brussels
2238	Sundial, horizontal	Steensen, St.; Frisenborg
334	Sundial, portable	Jensen Borger, I.; Copenhagen
2233	Sundial, portable	Mandern, Carl v.; Copenhagen
527	Sundial, portable	Not signed

539	Sundial, portable	Not signed
528	Sundial, portable	Not signed
2232	Sundial, portable	Not signed
530	Sundial, portable	Scharapalka; Poland
726	Sundial, ring	Hoffmann, C.S.; Copenhagen
540	Sundial, ring	Not signed
2050	Sundial, ring	Not signed
538	Sundial, ring	Sisson; London
327	Sundial, universal	Not signed
526	Sundial, woodcut prints	Graffenried; Berne
622	Sunshine recorder	Knudsen. Corn.; Copenhagen
677	Surveyor's cross	Not signed
1110	Switchboard	Marconi's Wireless; London
1190	Sympiezometer	Nissen, J.; Copenhagen
621	Sympiezometer	Thiele, F.A.; Copenhagen
1534	Syphon	Not signed
1524	Syphon, Fraterna caritas	Not signed
1522	Syphon, Reisel	Not signed
1521	Syphon, Reisel	Not signed
1542	Table, marble	Not signed
84	Table of distances	Not signed
1123	Tachistoscope	Not signed
1214	Tachometer	Jaquet; Switzerland
1215	Tachometer	Not signed
1531	Tantalus beaker	Not signed
1530	Tantalus beaker	Not signed
1561	Tantalus beaker	Not signed
759	Tantalus cup	Not signed
1067	Tantalus' beaker	Not signed
1479	Tantalus' beaker	Not signed
655	Teaching aid box (iron)	Not signed
2223	Telegraph, elect-magn.	Jünger, E.; Copenhagen
924	Telegraph, pneumatic	Not signed
1797	Telescope	Not signed
2056	Telescope, binocular	Not signed
2055	Telescope, binocular	Thiele, F.A.; Copenhagen
1657	Telescope, demonstration	Not signed
635	Telescope, galilean	Lerebours; Paris
632	Telescope, galilean	Not signed
633	Telescope, galilean	Not signed
634	Telescope, galilean	Not signed
805	Telescope, galilean	Not signed
1453	Telescope, gregorian	Adams, G.; London
131	Telescope, gregorian	Bidstrup, J.; London
1663	Telescope, gregorian	Dollond, J.; London
1789	Telescope, gregorian	Johnson, S.; London
1790	Telescope, gregorian	Nairne, E.; London
624	Telescope, gregorian	Not signed
627	Telescope, gregorian	Not signed
638	Telescope, gregorian	Not signed
735	Telescope, gregorian	Not signed
1671	Telescope, gregorian	Not signed

650	Telescope, gregorian	Veitch, James; Inchbonny
623	Telescope, gregorian	Watkins, J & W.; London
1662	Telescope, Newton	Schrader, J.G.; Kiel
1387	Telescope, reading	Not signed
1397	Telescope, reading	Société Genevoise; Genève
1403	Telescope, reading	Société Genevoise; Genève
1399	Telescope, reading	Zeiss, C.; Jena
649	Telescope, reflecting	Not signed
732	Telescope, reflecting	Not signed
733	Telescope, reflecting	Not signed
1659	Telescope, refracting	Ayscough; London
293	Telescope, refracting	Bancks, R.; London
353	Telescope, refracting	Bennett, T.; Cork
629	Telescope, refracting	Berge, M.; London
74	Telescope, refracting	Bidstrup, J.; London
477	Telescope, refracting	Busch, E.; Rathenow
355	Telescope, refracting	Cail; Newcastle
1925	Telescope, refracting	Cameron, J.R.; Liverpool
349	Telescope, refracting	Cohen, D.; Newcastle
2066	Telescope, refracting	Collin, C.G.; Stockholm
1996	Telescope, refracting	Cooke; York
637	Telescope, refracting	Deregni, Angelo
2174	Telescope, refracting	Dolland; London
88	Telescope, refracting	Dollond; London
324	Telescope, refracting	Dollond; London
291	Telescope, refracting	Dollond; London
351	Telescope, refracting	Dollond; London
630	Telescope, refracting	Dollond; London
644	Telescope, refracting	Dollond; London
1660	Telescope, refracting	Dollond; London
1945	Telescope, refracting	Dollond; London
2254	Telescope, refracting	Dollond; London
628	Telescope, refracting	Gilbert & Co; London
1604	Telescope, refracting	Gilbert & Co; London
377	Telescope, refracting	Harris, T. & Son; London
379	Telescope, refracting	Harris, W. & Son; London
2378	Telescope, refracting	Heilbuth; London
275	Telescope, refracting	Holst, H.E.; Copenhagen
347	Telescope, refracting	Hughes, H.; London
2062	Telescope, refracting	Introzzi, I.; London
133	Telescope, refracting	Jünger, E.; Copenhagen
1585	Telescope, refracting	Klein, G.W.; Copenhagen
1661	Telescope, refracting	Kleman, J.M. & Zoon; Amsterd.
1187	Telescope, refracting	Knudsen. Corn.; Copenhagen
1076	Telescope, refracting	Knudsen. Corn.; Copenhagen
1097	Telescope, refracting	Knudsen. Corn.; Copenhagen
1500	Telescope, refracting	Knudsen. Corn.; Copenhagen
378	Telescope, refracting	Long, Jas.; London
643	Telescope, refracting	Mern, G. & S.; München
1538	Telescope, refracting	Merz & Mahler
734	Telescope, refracting	Merz, G. & S.; München
1186	Telescope, refracting	Merz, G. & S.; München

150	Telescope, refracting	Not signed
154	Telescope, refracting	Not signed
152	Telescope, refracting	Not signed
144	Telescope, refracting	Not signed
143	Telescope, refracting	Not signed
69	Telescope, refracting	Not signed
145	Telescope, refracting	Not signed
83	Telescope, refracting	Not signed
208	Telescope, refracting	Not signed
326	Telescope, refracting	Not signed
207	Telescope, refracting	Not signed
344	Telescope, refracting	Not signed
345	Telescope, refracting	Not signed
380	Telescope, refracting	Not signed
354	Telescope, refracting	Not signed
352	Telescope, refracting	Not signed
646	Telescope, refracting	Not signed
626	Telescope, refracting	Not signed
642	Telescope, refracting	Not signed
645	Telescope, refracting	Not signed
636	Telescope, refracting	Not signed
820	Telescope, refracting	Not signed
1152	Telescope, refracting	Not signed
1316	Telescope, refracting	Not signed
1455	Telescope, refracting	Not signed
1456	Telescope, refracting	Not signed
1952	Telescope, refracting	Not signed
1953	Telescope, refracting	Not signed
1926	Telescope, refracting	Not signed
1969	Telescope, refracting	Not signed
2067	Telescope, refracting	Not signed
2312	Telescope, refracting	Not signed
73	Telescope, refracting	Plössl, S.; Vienna
2249	Telescope, refracting	Ramsden; London
350	Telescope, refracting	Salmoiraghi; Milano
346	Telescope, refracting	Silberrad; London
89	Telescope, refracting	Smith, Jeppe; Copenh.
356	Telescope, refracting	Smith, Jeppe; Copenhagen
640	Telescope, refracting	Smith, Jeppe; Copenhagen
625	Telescope, refracting	Smith, Jeppe; Copenhagen
1658	Telescope, refracting	Smith, Jeppe; Copenhagen
641	Telescope, refracting	Smith, Jeppe; Copenhagen.
348	Telescope, refracting	Stalker, D.; Leith
1773	Telescope, refracting	Steinheil; München
2068	Telescope, refracting	Troughton & Simms; London
2164	Telescope, refracting	Troughton & Simms; London
639	Telescope, refracting	Utzschneider & Fraunhofer; Mun.
2377	Telescope, refracting	Walker, F.; London
631	Telescope, refracting	Watkins; London
1183	Telescope, terrestrial	Knudsen. Corn.; Copenhagen
690	Tellurium	Schotte, E.; Berlin
2314	Tellurium	Schotte, E.; Berlin

1126	Temperament analyzer	Appunn, Ant.; Hanau
990	Tesla apparatus	Felma
989	Tesla apparatus	Phönix
1367	Tesla coil	Brock & Michelsen; Copenhagen
2250	Theodolite	Ertel; München
2331	Theodolite	Falck Rasmussen; Copenhagen
2324	Theodolite	Gambey; Paris
656	Theodolite	Halbauer; Zorge
1805	Theodolite	Hildebrand; Freiberg
1809	Theodolite	Hildebrand; Freiberg
1806	Theodolite	Hildebrand; Freiberg
1820	Theodolite	Hildebrand; Freiberg
1816	Theodolite	Hildebrand; Freiberg
2257	Theodolite,	Hildebrand; Freiberg
1804	Theodolite	Jünger (?); Copenhagen
2313	Theodolite	Jünger, E.; Copenhagen
1516	Theodolite	Leybold; Cologne
1819	Theodolite	Læssøe Müller, Th.; Copenhagen
1817	Theodolite	Neergaard, Th.A.; Copenhagen
684	Theodolite	Not signed
1807	Theodolite	Not signed
1731	Theodolite	Not signed
1808	Theodolite	Rosenberg, Th.; Berlin
1818	Theodolite	Rosenberg, Th; Berlin
1872	Theodolite	Thiele, F.A.; Copenhagen
2258	Theodolite	Troughton & Simms; London
2255	Theodolite	Wanschaff, Julius; Berlin
1848	Theodolite, educational	Leybold; Cologne
2333	Theodolite, plain	Adams; London
1765	Theodolite, plain	Not signed
2319	Theodolite, simple	Ertel; München
1823	Theodolite, simple	Fennel, Otto; Cassel
1770	Theodolite, simple	Hildebrand, Max; Freiberg
1822	Theodolite, simple	Hildebrand; Freiberg
1768	Theodolite, simple	Hildebrand; Freiberg
2256	Theodolite, simple	Hildebrand; Freiberg
1824	Theodolite, simple	Jünger (?); Copenhagen
1767	Theodolite, simple	Jünger (?); Copenhagen
1747	Theodolite, simple	Jünger (?); Copenhagen
2252	Theodolite, simple	Jünger, E.; Copenhagen
1832	Theodolite, simple	Korfitsen, P.; Copenhagen
1748	Theodolite, simple	Læssøe Müller, Th.; Copenhagen
680	Theodolite, simple	Not signed
1821	Theodolite, simple	Not signed
1766	Theodolite, simple	Rosenberg, Th.; Berlin
1746	Theodolite, simple	Sundby, O.; Copenhagen
2327	Theodolite, simple	Sundby, O.; Copenhagen
2329	Theodolite, simple	Wanschaff, Jul.; Berlin
1754	Theodolite, simple	Wolffius, J.C.; Leipzig
574	Theodolite, transit	Archbutt; London
2260	Theodolite, transit	Hildebrand, Max; Freiberg
2259	Theodolite, transit	Not signed

2328	Theodolite, transit	Reichenbach; München
1769	Theodolite, transit	Rosenberg, Th.; Berlin
1510	Thermo pile	Not signed
333	Thermo-hygro-barograph	Dörffel, P.; Berlin
963	Thermoelement	Bebicek; Prague
1581	Thermograph, bimetal	Knudsen. Corn.; Copenhagen
2422	Thermometer	
1669	Thermometer	Cetti; Copenhagen
86	Thermometer	Not signed
1694	Thermometer	Not signed
1667	Thermometer	Not signed
2381	Thermometer	Not signed
1611	Thermometer	Weitzmann (?)
2199	Thermometer, bimetal	Not signed
776	Thermometer, bimetallic	Holzman, Joh.
618	Thermometer, bimetallic	Jürgensen, L.U.; Copenhagen
462	Thermometer, bimetallic	Jürgensen, U.; Copenhagen
446	Thermometer, deep sea	Knudsen, Corn.; Copenhagen
1784	Thermometer, deep sea	Negretti & Zambra; London
1781	Thermometer, diff.	Not signed
1470	Thermometer, diff.	Weitzmann, C.; Hillerød
2002	Thermometer, diff.	Weitzmann, C.; Hillerød
471	Thermometer, Drebbel's	Molinari, A.; Copenhagen
1438	Thermometer, glass	Nielsen, Carl; Copenhagen
766	Thermometer, glass	Nissen, J.; Copenhagen
767	Thermometer, glass	Not signed
768	Thermometer, glass	Not signed
774	Thermometer, glass	Not signed
2142	Thermometer, Kinnersley	Not signed
2141	Thermometer, Kinnersley	Not signed
1684	Thermometer, Leslie	Ducrétet E. & Cie; Paris
1668	Thermometer, Six	Cetti; Copenhagen
1670	Thermometer, Six	Not signed
857	Thermopile	Not signed
1476	Thermopile	Not signed
1855	Thermopile	Not signed
1497	Thermoscope	Not signed
883	Thunder house	Knudsen. Corn.; Copenhagen
2095	Thunder house	Not signed
2093	Thunder house	Not signed
882	Thunder house	Weitzmann; Frederiksborg
2143	Thunder house	Weitzmann; Hillerød
2094	Thunder pyramid	Not signed
2302	Tinderbox	Not signed
1927	Tobacco box, seaman's	Not signed
2414	Topographical circle	Mandern, Carl v.; Copenhagen
1240	Torsion apparatus	Cambridge Scientific Instr
1027	Torsion apparatus	Leybold; Cologne
1689	Tourmaline forceps	Not signed
2299	Toy, magnetic	Not signed
2298	Toy, magnetic	Not signed
2200	Transformer coils	Not signed

2253	Transit instrument	Bamberg, Carl; Friedenau
578	Transit instrument	Frost; London
1180	Transit instrument	Jünger, E.; Copenhagen
651	Transit instrument	Troughton; London
1457	Transit instrument	Utschneider & Liebherr; Munich
1134	Transmission, stepless	Andersen & Sørensen; Copenhagen
803	Traverse board	Not signed
809	Traverse board	Not signed
1919	Traverse board	Not signed
34	Tread mill, model	Not signed
1546	Triple fall tracks	Not signed
311	Tumblers, glass, wood	Not signed
1450	Tuning fork, elect-magn.	Jürgensen, C.P.; Copenhagen
838	Tuning fork	Kohl, Max; Chemnitz
931	Tuning fork, el.-magn.	Kohl, Max; Chemnitz
1256	Tuning forks	Kohl, Max; Chemnitz
1475	Turbine model	Not signed
361	Turbine, Segnèr's	Not signed
2014	Typewriter	Jürgensen, C.P.; Copenhagen
1132	Typewriter,	Yost
737	Typewriter, Malling H.	Jürgensen, C.P.; Copenhagen
1131	Unknown	Edelmann; München
909	Unknown	Not signed
1575	Unknown glass instr.	Not signed
1815	Unknown instr.	Jünger, E.; Copenhagen
1432	V- and mA-meter	Nordisk Instrumentfabr; Holte
1291	Vacuum bottles	Not signed
739	Vacuum chamber	Not signed
1358	Vacuum demonstrations	Not signed
1335	Vacuum tube, double	Not signed
1334	Vacuum tube	Not signed
1336	Vacuum tube, magn.field	Not signed
1511	Vacuum tube, rot.vanes	Not signed
1509	Vacuum tube, fluoresc.	Not signed
1338	Vacuum tubes, collection	
1435	Vacuum- and Geissl.tubes	Not signed
1567	Valve, model	Not signed
997	Valve models	Not signed
1599	Variation meter	Not signed
1603	Variometer, declination	Not signed
1601	Variometer, horizontal	Edelmann; München
1602	Variometer, vertical	Not signed
20	Vera's hydr. pump	Not signed
1010	Vernier, demonstr.	Not signed
1905	Vernier model	Dørge, Otto; Copenhagen
14	Vernier model	Not signed
481	Viking sun compass	Not signed
903	Volta pistol	Not signed
902	Volta pistol	Not signed
901	Volta pistol	Not signed
900	Volta pistol	Not signed
893	Volta pistol	Not signed

2136	Volta pistol	Not signed
2134	Volta pistol, gun model	Not signed
2135	Volta pistol	Not signed
2139	Volta pistols	Not signed
2405	Voltage divider	Jensen, N.C.; Copenhagen
2201	Voltaic pile	Weizmann (?)
1573	Voltmeter	Brock, P.; Copenhagen
965	Voltmeter	Hartmann & Braun; Frankfurt
956	Voltmeter	Hartmann & Braun; Frankfurt
2410	Voltmeter	Weitzmann (Hartmann & Braun)
1202	Voltmeter	Weston El. Instr. Co.; Newark
1196	Voltmeter, standard	Weston El. Instr. Co.; Newark
68	Watch	Müller, J.H.; Schleswig
1665	Watch, seconds	Jürgensen, U.; Copenhagen
1464	Water decomposition	Not signed
2089	Water decomposition	Not signed
2088	Water decomposition	Not signed
1696	Water hammer	Not signed
1197	Wattmeter, precision	Siemens & Halske; Berlin
1026	Wave apparatus, Ling's	Nordstedt; Stockholm
888	Wave apparatus, mercury	Not signed
1487	Wave apparatus	Not signed
1028	Wave demonstration	Struers; Copenhagen
1879	Wedge gauge	Læssøe Müller, Th.; Copenhagen
23	Wedges	Not signed
606	Weight	Not signed
605	Weight	Not signed
1993	Weight	Not signed
2031	Weight	Not signed
1955	Weight	Not signed
1954	Weight	Not signed
2390	Weight	Not signed
2389	Weight	Not signed
298	Weight, chinese	Not signed
297	Weight, Kilogr. stdrd.	Fortin, Nicolaus; Paris
1956	Weight, nest	Not signed
1407	Weight, standard 1 kg	Fortin et Hermann; Paris
2417	Weights	
58	Weights	Not signed
60	Weights	Not signed
608	Weights	Not signed
609	Weights	Not signed
607	Weights	Not signed
1412	Weights	Not signed
1406	Weights	Not signed
1408	Weights	Not signed
2010	Weights	Not signed
2034	Weights	Not signed
2009	Weights	Not signed
2008	Weights	Not signed
2007	Weights	Not signed
2032	Weights	Not signed

2011	Weights	Not signed
1962	Weights	Not signed
1961	Weights	Not signed
2005	Weights	Not signed
1413	Weights	Westphal, G.; Celle
2371	Weights in box	Not signed
2370	Weights in box	Not signed
1079	Weights, nest	Not signed
1609	Weights, nest	Not signed
2006	Weights, nest	Not signed
2426	Weights, nests	Not signed
338	Weights, set in box	Not signed
780	Weights, set in box	Not signed
1409	Weights, set	Not signed
779	Weights, set in box	Sartorius; Göttingen
1495	Weights	D.R.
2042	Weights	Not signed
2043	Weights	Not signed
2051	Weights	Not signed
2063	Weights	Not signed
1994	Weights, nest	Not signed
1995	Weights, nest	Not signed
944	Wheatstone's bridge	Hartmann & Braun; Frankfurt
952	Wheatstone's bridge	Knudsen. Corn.; Copenhagen
2279	Wheatstone's bridge	Not signed
1224	Wheatstone's bridge	Siemens & Halske; Berlin
29	Wheel and axle	Not signed
2398	Wheelwright instr.	Not signed
42	Winch, differential	Not signed
1002	Winch, differential	Not signed
1566	Winch, model	Weitzmann, E.; Hillerød
33	Windlass, model	Not signed
35	Windlass, model	Not signed
1001	Windlass, model	Not signed
2000	Wire recorder	Marconi Telegraph; London
2270	Wisp, horse hair	Not signed
904	Wooden frame (?)	Not signed
32	Worm drive, windlass	Bidstrup, J; London
1563	Worm drive	Not signed
1490	Worm gear	Not signed
1776	Worm gear	Smith, Jeppe; Copenh.
2104	Woulfe's bottle	Not signed
2407	X-ray tube	Elektromekano; Copenhagen
969	X-ray tube	Gaiffe-Gallot; Paris
974	X-ray tube	Not signed
970	X-ray tube	Not signed
971	X-ray tube	Not signed
1588	Z-variometer	Edelmann; München
1598	Z-variometer	Knudsen. Corn.; Copenhagen
799	Zoetrope	Anschütz;
2210	Ørsted's experiment	Oechsle, C.F.; Pforzheim

Index by name of maker

711	Compass, bearing	A.K.
666	Compass, azimuth	A.O.S.
614	Sector	Acker; Emmishofen
1674	Quadrant, artillery	Adams, G.; London
1453	Telescope, gregorian	Adams, G.; London
1518	Fire engine, model	Adams, Geo.; London
2333	Theodolite, plain	Adams; London
581	Octant	Adams(?)
1891	Compass, beam	Adrian, P.F.; Copenhagen
2322	Scale rules	Adrian;
2325	Circle, surveyor's	Ahl, Joh.;
1182	Circle, surveyor's	Ahl, Joh.; Copenhagen
1881	Circle, surveyor's	Ahl, Joh.; Copenhagen
652	Quadrant, astronomical	Ahl, Joh.; Copenhagen
707	Compass, marine	Ainsley, H.R.; Cardiff
1928	Hydrometer, Sike	Ainsley, Th.L.; Cardiff
319	Octant	Ainsley; South Shields
1228	Anemometer	Alnor; Illinois
1866	Planimeter	Amsler, J.; Schaffhausen
1867	Planimeter, polar	Amsler, J.; Schaffhausen
1826	Planimeter, polar	Amsler; Schaffhausen
1592	Geo-magnetic inst.	Andersen & Sørensen; Copenhagen
1134	Transmission, stepless	Andersen & Sørensen; Copenhagen
1104	Morse receiver	Andersen, Evald; Copenhagen
1101	Morse receiver	Andersen, Evald; Copenhagen
1892	Globe, celestial	Andersen, N./Reitzel; Copenh.
691	Globe, celestial	Andersen, N./Reitzel; Copenh.
505	Globe, celestial	Andersen, N.; Copenhagen
1907	Steering machine, model	Andersen, V.; Copenhagen
799	Zoetrope	Anschütz;
1184	Diptych	Ansonia Clock Co.; New York
493	Globe, Mars	Antoniadi, E.; Paris
1126	Temperament analyzer	Appunn, Ant.; Hanau
2110	Balance	Arbo-Bähr & Co; Copenhagen
321	Sextant	Archbutt, J.& W.E.; London
574	Theodolite, transit	Archbutt; London
730	Chronometer, marine	Arnold; London
1448	Relay, La Cour's key	Askov; Vejen
135	Compass, azimuth	Augsburg, August; Copenhagen
156	Compass, marine	Augsburg, August; Copenhagen
2069	Compass, marine	Augsburg, August; Copenhagen
1983	Barometer, cistern	Aureggi, Carlo
1825	Planimeter	Ausfeld, H.; Gotha
332	Diptych, wood	Autor
1659	Telescope, refracting	Ayscough; London
402	Bearing dial	Bain & Ainsley
322	Pyrometer, Daniell	Baker, C.; London
2253	Transit instrument	Bamberg, Carl; Friedenau
293	Telescope, refracting	Bancks, R.; London

445	Compass, marine	Bang, Stie; Copenhagen
1673	Quadrant, universal	Baradelle fils; Paris
1672	Quadrant, artillery	Baradelle Fils; Paris
1692	Globe, celestial	Bardin, W. & T.M.; London
1693	Globe, terrestrial	Bardin, W. & T.M.; London
488	Microscope, compound	Bardou, A.; Paris
128	Compass card	Baroni, E.; Gènes
366	Barometer, marine	Bassnett; Liverpool
1057	Microscope, Culpeper	Bastholm, N; Copenhagen
1056	Microscope, Culpeper	Bastholm, N; Copenhagen
369	Course indicator	Battenberg, Elliott Br; London
963	Thermoelement	Bebicek; Prague
1382	Saccharimeter	Bellingham & Stanley; London
353	Telescope, refracting	Bennett, T.; Cork
440	Compass, portable	Berg, Peter; Copenhagen
520	Compass, portable	Berg, Peter; Copenhagen
629	Telescope, refracting	Berge, M.; London
566	Graphometer	Bernier; Paris
232	Octant	Berry & Sons; Hartlepool
1680	Globe, terrestrial	Beyer, J.; Hamburg
1681	Globes, cel.concave	Beyer, J.; Hamburg
2131	Barometer, cistern	Bianchi, P.; Aalborg
22	Mechanical powers	Bidstrup, J.; London
98	Pulley frame	Bidstrup, J.; London
131	Telescope, gregorian	Bidstrup, J.; London
74	Telescope, refracting	Bidstrup, J.; London
32	Worm drive, windlass	Bidstrup, J.; London
1626	Microscope	Bidstrup, J; London
498	Globe, celestial	Blaeu; Amsterdam
501	Globe, celestial	Blaeu; Amsterdam
703	Compass, marine	Boosman, W.; Amsterdam
437	Compass, marine	Bram, Carl Chr.; Elsinore
284	Compas, declination	Brander (?); Augsburg
753	Hydrometers, set	Brander (?); Augsburg
271	Dip needle	Brander, G.F.; Augsburg
758	Hydrometer	Brander, G.F.; Augsburg
1830	Sextant	Breithaupt, F.W.; Cassel
1367	Tesla coil	Brock & Michelsen; Copenhagen
1573	Voltmeter	Brock, P.; Copenhagen
2108	Balance, chemical	Bruhn & Lehrmann; Copenhagen
1212	Calculating machine	Brunsviga; Braunschweig
821	Artificial horizon	Bryde, F.; Copenhagen
1139	Camera, mahogany	Budtz & Møller; Copenhagen
1405	Balance, short beam	Bunge, Paul; Hamburg
1410	Balance, short beam	Bunge, Paul; Hamburg
2126	Measures, volume	Buntzen; A.
2064	Measure, volume	Bunzen, L.; Copenhagen
1073	Air pump, vacuum	Burmeister, C.; Copenhagen
1643	Mirror, anamorph.; drgs.	Burucker, I.M.
477	Telescope, refracting	Busch, E.; Rathenow
2230	Quadrant	Busch, Johannes; Copenhagen
1752	Level, Y-type	Butenschön, G.; Hamburg

285	Quadrant	Butenschön, Georg; Hamburg
533	Sundial, Butterfield	Butterfield; Paris
1125	Camera, bellows	Butz-Müller; Copenhagen
1579	Dip circle	Buzengeiger, W.G.; Tübingen
197	Calculator, military	BWS
1870	Planimeter, polar	Bøgh, A.; Denmark
2003	Bismar	C.C.S.
2395	Measure, volume, Rømer	C5 M
709	Compass, marine	Cail, J.; Newcastle
112	Sextant	Cail, S.H.; Newcastle
355	Telescope, refracting	Cail; Newcastle
1208	Galvanometer, Duddell	Cambridge Scient. Instr. Co.
1398	Electrometer, Wilson	Cambridge Scientific Instr
1240	Torsion apparatus	Cambridge Scientific Instr
1237	Expansion apparatus(?)	Cambridge Scientific Instr.
1379	Spirit level tester	Cambridge Scientific Instr.
1925	Telescope, refracting	Cameron, J.R.; Liverpool
1135	Resistor, variable	Cameron; Chicago
238	Octant	Campbell, W. & Co, Hamburg
1266	Casholder, glass	Canzius; Delft
1764	Alidade, plane table	Carlson & Österberg; Gothenburg
708	Compass, bearing	Carstens, Aug.; Hamburg
2132	Hydrometer	Cetti, A.; Copenhagen
2430	Hydrometer	Cetti, A.; Copenhagen
2427	Hydrometer	Cetti, A.; Copenhagen
2428	Hydrometer	Cetti, A.; Copenhagen
2429	Hydrometer	Cetti, A.; Copenhagen
1669	Thermometer	Cetti, A.; Copenhagen
1668	Thermometer, Six	Cetti, A.; Copenhagen
570	Graphometer	Chapotot; Paris
1886	Measuring tape	Chesterman; Sheffield
463	Microscope	Chevalier, Ch.; Paris
456	Microscope	Chevalier, Ch.; Paris
1035	Air gun	Christianiahn; Wernigeroda
685	Alidade, plane table	CJJ
822	Octant	Clephin, I.; London
349	Telescope, refracting	Cohen, D.; Newcastle
227	Octant	Cohen; Newcastle
2066	Telescope, refracting	Collin, C.G.; Stockholm
1301	Air gun	Contriner
397	Course corrector	Cook, B. & Son; Hull
1150	Range finder	Cooke, T. & Sons; London, York
1996	Telescope, refracting	Cooke; York
1864	Planimeter	Coradi, G.; Zürich
1865	Planimeter	Coradi, G.; Zürich
1827	Planimeter	Coradi, G.; Zürich
1829	Planimeter	Coradi, G.; Zürich
547	Microscope, compound	Cuff; London
546	Microscope, screw barrel	Cuff; London
582	Octant	Culmer & Tennant; London
1970	Octant	Culmer; London
2242	Drawing instruments	Culpeper; London

1723	Electrometer, discharge	Cuthbertson; London
1724	Electrometer, discharge	Cuthbertson; London
676	Sextant	Cutts; Sheffield
2073	Chondrometer	D.F.E.
1495	Weighths	D.R.
972	Laboratory stand	D.R.G.M.
2374	Phonograph	Dansk Fonograf Magasin; Copenh
1109	Radio receiver	Dansk Telegrafonfabrik; Copenh.
923	Grammophone, Vald. Poulsen	Dansk Telegrafonfabrik; Copenh.
978	Capacitor, variable	Dansk Telegrafonfabrik; Copenh.
1640	Kaleidoscope	Darker, C. & F.; London
858	Slide rule	Darmstadt
300	Octant	de Kemel, Charles; Antwerp
1326	Galvanometer, mov.coil	DEIF; Copenhagen
1431	Galvanometer, mov.coil	Deleuran Sophus; Aarhus
2247	Sundial, Butterfield	Delure; Paris
1858	Rule	Dennert & Pape; Altona
543	Chronometer, marine	Dent; London
637	Telescope, refracting	Deregni, Angelo
1458	Relay, La Cour's key	Description
123	Compass, marine	Diderichsen, Jacob; Copenhagen
1102	Morse receiver	Digney Frères
1977	Morse transm. and rec.	Digney Frères
487	Morse receiver	Digney Frères; Paris
2174	Telescope, refracting	Dolland; London
1663	Telescope, gregorian	Dollond, J.; London
509	Microscope, culpeper	Dollond, London
146	Octant	Dollond London
236	Octant	Dollond London
1675	Octant	Dollond London
142	Sextant	Dollond London
459	Microscope, solar	Dollond; London
797	Microscope, solar	Dollond; London
88	Telescope, refracting	Dollond; London
291	Telescope, refracting	Dollond; London
351	Telescope, refracting	Dollond; London
324	Telescope, refracting	Dollond; London
644	Telescope, refracting	Dollond; London
630	Telescope, refracting	Dollond; London
1660	Telescope, refracting	Dollond; London
1945	Telescope, refracting	Dollond; London
2254	Telescope, refracting	Dollond; London
688	Globe, celestial	Doppelmayr
687	Globe, terrestrial	Doppelmayr
325	Globe, celestial	Doppelmayr, Nuremberg
1594	Dip circle	Dover, John
500	Globe, celestial	Dreschler; Dresden
1108	Coin balance	Drielenburch, Jacob
4	Octant	Du Bois, A.; Antwerp
1375	Lens, plano-convex	Duboscq, J.; Paris
1584	Polarimeter	Duboscq J.; Paris
1690	Polariscope, Nörrenberg	Duboscq, J.; Paris

1381	Saccharimeter	Duboscq, J.; Paris
1402	Spectrograph, quartz	Duboscq, J.; Paris
1376	Prism and lens, stand	Duboscq-Soleil; Paris
2304	Calorimeter, Regnault	Ducrotet, E.; Paris
1684	Thermometer, Leslie	Ducrotet E. & Cie; Paris
1328	Electrostatic gen.Wimsh.	Ducrotet; Paris
862	Air pump, pressure	Dumotiez Frères; Paris
1364	Air pump, pressure	Dumotiez Frères; Paris
1355	Attwood fall machine	Dumotiez Frères; Paris
1726	Electrostatic gen.frict.	Dumotiez Frères; Paris
1905	Vernier model	Dørge, Otto; Copenhagen
333	Thermo-hygro-barograph	Dörfel, P.; Berlin
1369	Camera, photo	Eastman; Rochester
1597	D-variometer	Edelmann; München
1595	Dip meter, induction	Edelmann; München
1596	Galvanometer, mov.coil	Edelmann; München
1593	Inclination meter, Weber	Edelmann; München
1131	Unknown	Edelmann; München
1601	Variometer, horizontal	Edelmann; München
1588	Z-variometer	Edelmann; München
975	Incandescant bulbs	Edison (?)
1615	Chondrometer	Ehlers, D.F.; Hamburg
2407	X-ray tube	Elektromekano; Copenhagen
1223	Capacitor	Elliott Bros; London
1779	Dip circle	Ernecke, F.; Berlin
1735	Level, Y-type	Ertel & Sohn; München
1749	Level, Y-type	Ertel & Sohn; München
2250	Theodolite	Ertel; München
2319	Theodolite, simple	Ertel; München
476	Calliper, sliding	Escher; Kempten
171	Pressure gauge, test	F.L.D.
1587	Balance, Lloyd magnetic	Falck Rasmussen; Copenhagen
2331	Theodolite	Falck Rasmussen; Copenhagen
1045	Hot air machine	Faxøe, J.; Stubbekøbing
113	Sextant	Feathers, P.A.; Dundee
990	Tesla apparatus	Felma
1874	Measure, standard length	Fennel, Otto; Cassel
1823	Theodolite, simple	Fennel, Otto; Cassel
1859	Rule	Fennel; Cassel
579	Graphometer	Fiebig; The Hague
431	Compass, azimuth	Filby, D.; Hamburg
1411	Balance, chemical	Fleischer, H.; Berlin
1061	Induction coil, Ford	Ford
1342	Induction coil	Ford
1407	Weight, standard 1 kg	Fortin et Hermann; Paris
297	Weight, Kilogr.stdrd.	Fortin, Nicolaus; Paris
1718	Electrometer, Coulomb	Fortin; Paris
1759	Level, telescopic	Frerk, A.; Celle
1216	Calculating machine	Friden; Holland
125	Salinometer	Fricake & Sons; London
119	Sundial	Frommüller, Christoff
578	Transit instrument	Frost; London

191	Psychrometer	Fuess; Berlin
1230	Refractometer, Abbe's	Fuess; Berlin
1384	Refractometer, Tulley's	Fuess; Berlin
508	Globe, terrestrial	Föld
613	Sector	Gaedde, E.I.
969	X-ray tube	Gaiffe-Gallot; Paris
2160	Octant	Gallaghan; London
1263	Dip needle	Gambey; Paris
586	Reflecting circle, Borda	Gambey; Paris
2324	Theodolite	Gambey; Paris
486	Resistance box	Gebr. Ruhstrat; Göttingen
1201	Ammeter	Gebr. Ruhstrat; Göttingen
2220	Resistance box	Gebr. Ruhstrat; Göttingen
1250	Pyknometer	Geissler, Ch.F.; Berlin
396	Log, electric	Gentas; Copenhagen
395	Log, mechanical taffrail	Gentas; Copenhagen
717	Log, mechanical taffrail	Gentas; Copenhagen
1666	Alidade, telescopic	Geod. Inst.; Copenhagen1197
628	Telescope, refracting	Gilbert & Co; London
1604	Telescope, refracting	Gilbert & Co; London
121	Davis quadrant	Gilbert, John; London
2244	Drawing instruments	Gilbert Wright & Hooke; London
2029	Measure, volume	Glud og Marstrand; Copenh.
1136	Amplifier tube	Gottlieb Hansen; Copenhagen
1810	Ophthalmometer	Goubeadec (?); Paris
526	Sundial, woodcut prints	Graffenried; Berne
1105	Punched card machine	Great Northern Tel.; Copenhagen
999	Joule's experiment	Gregersen, Alf.; Copenhagen
713	Compass, bearing	Gregory, H.; London
1169	Chronometer, marine	GUB; DDR
572	Quadrant, artillery	H.E.
1762	Alidade, plane table	H.R.W.;
91	Armillary sphere	Habrecht, Isaac; Strassburg
90	Clock, astronomical	Habrecht, Isaac; Strassburg
394	Log, mechanical taffrail	Haecke, H.; Berlin
179	Sextant	Haecke, H.; Neukölln
2348	Quadrant	Hahn, A. & R.; Cassel
656	Theodolite	Halbauer; Zorge
211	Binnacle	Hallgren, Copenhagen
2170	Station pointer	Hallgren's Eft.; Copenhagen
724	Sundial, equinoctial	Hanneus, J.D.; Meldorff
597	Scale, plotting	Hansen, J.E.T.
377	Telescope, refracting	Harris, T. & Son; London
379	Telescope, refracting	Harris, W. & Son; London
375	Barometer, marine	Harrison, J.; Hull
240	Octant	Harrison; Hull
961	Galvanometer	Hartmann & Braun; Frankfurt
965	Voltmeter	Hartmann & Braun; Frankfurt
956	Voltmeter	Hartmann & Braun; Frankfurt
944	Wheatstone's bridge	Hartmann & Braun; Frankfurt
1419	Quadrant, astrolabe	Hartmann, Georg; Nuremberg
206	Globe, celestial	Heath & Co; London

817	Parallel rule	Heath & Co; London
241	Octant	Heath; Devonport
407	Bearing dial	Heath's London Polaris
844	Spectroscope	Heele, H.; Berlin
1374	Spectrometer, portable	Heele, Hans; Berlin
231	Octant	Heilbuth, S.; London
2162	Compass card	Heilbuth, S.; London
2159	Octant	Heilbuth, S.; London
2378	Telescope, refracting	Heilbuth, S.; London
245	Octant	Helt, Lars; Bergen
1200	Ammeter	Helweg Mikkelsen, Copenhagen
1502	Galvanometer	Helweg Mikkelsen; Copenhagen
1422	Milliamp- & voltmeter	Helweg Mikkelsen; Copenhagen
984	Galvanometer, mov.coil	Helweg-Mikkelsen; Copenhagen
867	Magdeburg hemispheres	Hering, Carl; Auerbach
1973	Octant	Hicks, T.; Dublin
1770	Theodolite, simple	Hildebrand; Freiberg
2260	Theodolite, transit	Hildebrand; Freiberg
1820	Theodolite	Hildebrand; Freiberg
1805	Theodolite	Hildebrand; Freiberg
1806	Theodolite	Hildebrand; Freiberg
1809	Theodolite	Hildebrand; Freiberg
1816	Theodolite	Hildebrand; Freiberg
2257	Theodolite,	Hildebrand; Freiberg
1822	Theodolite, simple	Hildebrand; Freiberg
1768	Theodolite, simple	Hildebrand; Freiberg
2256	Theodolite, simple	Hildebrand; Freiberg
3	Sextant	Hilger & Watts; London
1120	Chronoscope, Hipp	Hipp, M.; Neuchatel
726	Sundial, ring	Hoffmann, C.S.; Copenhagen
2401	Galvanic elements	Hoffmann; Reiersen; Copp.
834	Siren, de Latour	Hofmann; Paris
843	Spectroscope, direct v.	Hofmann; Paris
1943	Chronometer, marine	Hohwy; Amsterdam
82	Diptych, gilded	Holm, A.
2165	Compass, marine	Holst, A.; Faaborg
1242	Barometer, aneroid	Holst, H.E.; Copenhagen
416	Bearing dial	Holst, H.E.; Copenhagen
710	Compass, bearing	Holst, H.E.; Copenhagen
1880	Cross head	Holst, H.E.; Copenhagen
795	Microscope, compound	Holst, H.E.; Copenhagen
2368	Range finder	Holst, H.E.; Copenhagen
275	Telescope, refracting	Holst, H.E.; Copenhagen
619	Barometer, surveying	Holst; Copenhagen
510	Compass, marine	Holst; Copenhagen
517	Compass, portable	Holst; Copenhagen
166	Altitude sextant	Holst, H.E.; Copenhagen
158	Binnacle	Holst, H.E.; Copenhagen
442	Compass, marine	Holst, H.E. Eftf; Copenhagen
417	Bearing dial	Holt, I.L.; Tønsberg
2045	Magneto-electric machine	Holten Worsøe, Aalborg
776	Thermometer, bimetallic	Holzman, Joh.

525	Deviatometer	Hughes & Son; London
159	Hydrometer, Sike	Hughes & Son; London
160	Rangefinder	Hughes & Son; London
164	Station pointer	Hughes & Son; London
258	Azimuth mirror	Hughes, H. & Son; London
405	Bearing dial	Hughes, H. & Son; London
181	Globe, celestial	Hughes, H. & Son; London
1147	Range finder	Hughes, H. & Son; London
192	Rangefinder	Hughes, H. & Son; London
199	Sextant	Hughes, H. & Son; London
266	Sextant	Hughes, H. & Son; London
807	Radiograph	Hughes, H.; London
347	Telescope, refracting	Hughes, H.; London
262	Rangefinder	Hurliman, A.; Paris
261	Rangefinder	Hurliman, A.; Paris
214	Rangefinder, stadimeter	Hurliman, A.; Paris
2388	Barometer, cistern	Höyer; Axel; Denmark
2059	Gravity toy	I.G.N.
1612	Set square	Iensen, P.; Denmark
2175	Backstaff	illegible
2303	Geometrical figures	illegible
2062	Telescope, refracting	Introzzi, I.; London
2432	Hydrometer, Kaiser	Isaacsen, R.; Copenhagen
1803	Barometer, siphon	Jacob, F.C.; Copenhagen
1214	Tachometer	Jaquet; Switzerland
2205	Compass, marine	Jas. Blair; Newcastle
103	Chronoscope	Jaspar, J.; Liège
105	Electric ballist.instr.	Jaspar J.; Liège
279	Reflecting circle	Jecker; Paris
219	Drawing instruments	Jefferson, A.; Hull
222	Octant	Jeffrey, John; Bo'ness
1232	Refractometer, Abbe's	Jena
101	Compass card	Jensen Borger, I.; Copenhagen
210	Compass, tell-tale	Jensen Borger, I.; Copenhagen
334	Sundial, portable	Jensen Borger, I.; Copenhagen
522	Compass, portable	Jensen Borger, I.; Copenhagen
1157	Compass, portable	Jensen Borger, I.; Copenhagen
511	Compass, tell-tale	Jensen Borger, I.; Copenhagen
382	Barometer, cistern	Jensen, J.C.; Esbjerg
335	Nocturnal, (repr.)	Jensen, Jens Kusk; Denmark
250	Cross-bow quadrant (repr.)	Jensen, Jens Kusk; Denmark
251	Plow, quadrant (repr.)	Jensen, Jens Kusk; Denmark
252	Quadrant (repr.)	Jensen, Jens Kusk; Denmark
1392	Capacitor	Jensen, N.C.; Copenhagen
1393	Capacitor	Jensen, N.C.; Copenhagen
1391	Capacitor	Jensen, N.C.; Copenhagen
1222	Capacitor, variable, air	Jensen, N.C.; Copenhagen
1207	Galvanometer, mov.coil	Jensen, N.C.; Copenhagen
1416	Galvanometer, mov.coil	Jensen, N.C.; Copenhagen
2406	Potentiometer	Jensen, N.C.; Copenhagen
1226	Resistance box	Jensen, N.C.; Copenhagen
1217	Resistance box	Jensen, N.C.; Copenhagen

1220	Resistance boxes	Jensen, N.C.; Copenhagen
1389	Resistance, dial	Jensen, N.C.; Copenhagen
1390	Resistance, dial	Jensen, N.C.; Copenhagen
1219	Resistance, standard	Jensen, N.C.; Copenhagen
1388	Resistance, standard	Jensen, N.C.; Copenhagen
1394	Self-induction coil	Jensen, N.C.; Copenhagen
1395	Self-induction coil	Jensen, N.C.; Copenhagen
1396	Self-induction, standard	Jensen, N.C.; Copenhagen
1210	Shunt, universal	Jensen, N.C.; Copenhagen
2405	Voltage divider	Jensen, N.C.; Copenhagen
65	Clock	Jensen, Peder; Nøttestad
729	Chronometer, marine	Johannsen, A.; London
2404	Barometer, cistern	Johansen, Hans; Lemming
1789	Telescope, gregorian	Johnson, S.; London
719	Globe, celestial	Johnston, A.K.; Edinburgh
731	Globe, terrestrial	Johnston, W. & A.K.; Edinburgh
140	Artificial horizon	Jones, Thomas; London
681	Drawing instr. (?)	jtt; Nürnberg
1750	Level, telescopic	Jünger (?); Copenhagen
1804	Theodolite	Jünger (?); Copenhagen
1824	Theodolite, simple	Jünger (?); Copenhagen
1747	Theodolite, simple	Jünger (?); Copenhagen
1767	Theodolite, simple	Jünger (?); Copenhagen
1743	Alidade, plane table	Jünger, E.; Copenhagen
1742	Alidade, plane table	Jünger, E.; Copenhagen
1740	Alidade, plane table	Jünger, E.; Copenhagen
1414	Balance, chemical	Jünger, E.; Copenhagen
1792	Barometer, cistern	Jünger, E.; Copenhagen
663	Compass, azimuth	Jünger, E.; Copenhagen
1876	Compass, azimuth	Jünger, E.; Copenhagen
1877	Compass, deviation	Jünger, E.; Copenhagen
1437	Dip needle	Jünger, E.; Copenhagen
1060	Induction apparatus	Jünger, E.; Copenhagen
575	Level, surveyor's	Jünger, E.; Copenhagen
1729	Level, telescopic	Jünger, E.; Copenhagen
1873	Measure, standard length	Jünger, E.; Copenhagen
2278	Morse receiver	Jünger, E.; Copenhagen
265	Quadrant	Jünger, E.; Copenhagen
1238	Rotating mirror	Jünger, E.; Copenhagen
2322	Scale rules	Jünger, E.; Copenhagen
2223	Telegraph, electr-magn.	Jünger, E.; Copenhagen
133	Telescope, refracting	Jünger, E.; Copenhagen
2313	Theodolite	Jünger, E.; Copenhagen
2252	Theodolite, simple	Jünger, E.; Copenhagen
1180	Transit instrument	Jünger, E.; Copenhagen
1815	Unknown instr.	Jünger, E.; Copenhagen
2334	Level, surveyor's	Jünger, E.; Copenhagen
1436	Phonic wheel, La Cour	Jürgensen, C.P.; Copenhagen
1452	Phonic wheel	Jürgensen, C.P.; Copenhagen
1451	Phonic wheel	Jürgensen, C.P.; Copenhagen
1450	Tuning fork, elect-magn.	Jürgensen, C.P.; Copenhagen
2014	Typewriter	Jürgensen, C.P.; Copenhagen

737	Typewriter, Malling H.	Jürgensen, C.P.; Copenhagen
618	Thermometer, bimetallic	Jürgensen, L.U.; Copenhagen
542	Chronometer, pocket	Jürgensen, U.; Copenhagen
2413	Clock, astronomical	Jürgensen, U.; Copenhagen
462	Thermometer, bimetallic	Jürgensen, U.; Copenhagen
1665	Watch, seconds	Jürgensen, U.; Copenhagen
2074	Chondrometer	Jørgensen, L.; Horne
1137	Gas analysis app.	Kaeler & Martini; Berlin
1118	Kymograph	Kagenaar, D.B.; Utrecht
130	Quadrant, artillery	Kajiser, D.; Frederiksværk Denm.
78	Diptych, ivory	Karner, Leonhard A; Nuremb.
2340	Quadrant, artillery	Kayser, D.; Frederiksværk
1895	Shadow pin, gnomon	Keiki Seizo Ltd; Tokyo
1149	Bearing dial	Kelvin & Hughes
449	Binnacle	Kelvin & James White; Glasgow
399	Bearing dial	Kelvin & White
190	Dip needle	Kelvin Bottomley & Baird
518	Compass, marine	Kempel; Aarhus
167	Drawing instruments	Kern & Cie; Aarau
2362	Chronometer, marine	Kessels; Altona
1841	Calculator, Thatcher's	Keuffel & Esser; New York
330	Diptych, wood	Kihninger, J.P.
444	Compass, marine	Kirkeby, L.; Copenhagen
1939	Compass, marine	Kirkeby, L.; Copenhagen
1165	Sextant	Kirkeby, L.; Copenhagen
2352	Station pointer	Kirkeby, L.; Copenhagen
111	Sextant	Klausen (?), F.L.; Copenhagen
2318	Alidade, plane table	Klein, G.W.; Copenhagen
567	Alidade, telescopic	Klein, G.W.; Copenhagen
1075	Balance, chemical	Klein, G.W.; Copenhagen
1600	Dip needle	Klein, G.W.; Copenhagen
2288	Electrostatic gen. Carré	Klein, G.W.; Copenhagen
1814	Galvanometer	Klein, G.W.; Copenhagen
1523	Hydraulic press, Bramah	Klein, G.W.; Copenhagen
1586	Magnetometer	Klein, G.W.; Copenhagen
2316	Measures, length	Klein, G.W.; Copenhagen
2317	Measures, length	Klein, G.W.; Copenhagen
126	Protractor	Klein, G.W.; Copenhagen
299	Reflecting circle	Klein, G.W.; Copenhagen
1585	Telescope, refracting	Klein, G.W.; Copenhagen
1661	Telescope, refracting	Kleman, J.M. & Zoon; Amsterd.
494	Globe, terrestrial	Klinger, Joh.G.; Nuremberg
2403	Hydrometers	Klint, N.H.
426	Bearing dial	Knudsen, Corn.;
408	Azimuth circle	Knudsen, Corn.; Copenhagen
189	Azimuth mirror	Knudsen, Corn.; Copenhagen
420	Azimuth mirror	Knudsen, Corn.; Copenhagen
255	Bearing dial	Knudsen, Corn.; Copenhagen
257	Bearing dial	Knudsen, Corn.; Copenhagen
188	Bearing dial	Knudsen, Corn.; Copenhagen
195	Bearing dial	Knudsen, Corn.; Copenhagen
419	Bearing dial	Knudsen, Corn.; Copenhagen

403	Bearing dial	Knudsen, Corn.; Copenhagen
428	Compass card, Kelvin's	Knudsen, Corn.; Copenhagen
259	Course magnifier	Knudsen, Corn.; Copenhagen
421	Course magnifier	Knudsen, Corn.; Copenhagen
254	Depth sounder	Knudsen, Corn.; Copenhagen
201	Dip needle	Knudsen, Corn.; Copenhagen
136	Hydrometer, salinometer	Knudsen, Corn.; Copenhagen
141	Hydrometer, salinometer	Knudsen, Corn.; Copenhagen
447	Level, surveyor's	Knudsen, Corn.; Copenhagen
788	Reflection experiment	Knudsen, Corn.; Copenhagen
798	Refraction experiment	Knudsen, Corn.; Copenhagen
946	Relay	Knudsen, Corn.; Copenhagen
1845	Resistance box	Knudsen, Corn.; Copenhagen
390	Sandglass	Knudsen, Corn.; Copenhagen
446	Thermometer, deep sea	Knudsen, Corn.; Copenhagen
202	Compass, marine	Knudsen, Corn.; Copenhagen
814	Anemometer	Knudsen, Corn.; Copenhagen
1085	Azimuth mirror	Knudsen, Corn.; Copenhagen
1084	Azimuth mirror	Knudsen, Corn.; Copenhagen
2411	Barometer, aneroid	Knudsen, Corn.; Copenhagen
2061	Binnacle	Knudsen, Corn.; Copenhagen
1083	Binnacle, educational	Knudsen, Corn.; Copenhagen
1910	Binnacle head	Knudsen, Corn.; Copenhagen
2349	Calculator, anchoring	Knudsen, Corn.; Copenhagen
1349	Capacitor, variable air	Knudsen, Corn.; Copenhagen
1753	Chain, surveyor's	Knudsen, Corn.; Copenhagen
704	Compass, compensated	Knudsen, Corn.; Copenhagen
1430	Compass, marine	Knudsen, Corn.; Copenhagen
1144	Course magnifier	Knudsen, Corn.; Copenhagen
1878	Cross head	Knudsen, Corn.; Copenhagen
818	Deflector	Knudsen, Corn.; Copenhagen
1903	Deflector, Clausen	Knudsen, Corn.; Copenhagen
453	Depth sounder	Knudsen, Corn.; Copenhagen
451	Depth sounder	Knudsen, Corn.; Copenhagen
450	Depth sounder	Knudsen, Corn.; Copenhagen
1094	Depth sounder	Knudsen, Corn.; Copenhagen
1909	Depth sounder	Knudsen, Corn.; Copenhagen
1898	Depth sounder, Mariotte	Knudsen, Corn.; Copenhagen
749	Dilatation meter	Knudsen, Corn.; Copenhagen
932	Electric motor, model	Knudsen, Corn.; Copenhagen
993	Electrometer, quadrant	Knudsen, Corn.; Copenhagen
1368	Electrostatic gen. ind.	Knudsen, Corn.; Copenhagen
1070	Electrostatic gen. Wimsh.	Knudsen, Corn.; Copenhagen
1783	Galvanometer, astatic	Knudsen, Corn.; Copenhagen
1421	Galvanometer, tangent	Knudsen, Corn.; Copenhagen
1564	Gear mechanism	Knudsen, Corn.; Copenhagen
1095	Globe, black educational	Knudsen, Corn.; Copenhagen
1036	Heat conduction app.	Knudsen, Corn.; Copenhagen
1755	Helioscope	Knudsen, Corn.; Copenhagen
2435	Hydrom., Saccharometer	Knudsen, Corn.; Copenhagen
1248	Hydrometer	Knudsen, Corn.; Copenhagen
935	Induction coil, Ruhmkorff	Knudsen, Corn.; Copenhagen

829	Kaleidoscope	Knudsen. Corn.; Copenhagen
654	Level, surveyor's	Knudsen. Corn.; Copenhagen
1745	Level, telescopic	Knudsen. Corn.; Copenhagen
675	Magnetic experiment	Knudsen. Corn.; Copenhagen
1875	Measure, standard length	Knudsen. Corn.; Copenhagen
804	Mirror, azimuth	Knudsen. Corn.; Copenhagen
1930	Mirror, azimuth	Knudsen. Corn.; Copenhagen
1896	Mirrors, angled	Knudsen. Corn.; Copenhagen
1811	Photometer	Knudsen. Corn.; Copenhagen
1869	Planimeter	Knudsen. Corn.; Copenhagen
1401	Polarimeter, Nörrenberg	Knudsen. Corn.; Copenhagen
1853	Polariscope, Nörrenb.	Knudsen. Corn.; Copenhagen
751	Pressure gauge	Knudsen. Corn.; Copenhagen
812	Protractor	Knudsen. Corn.; Copenhagen
1834	Protractor, circular	Knudsen. Corn.; Copenhagen
550	Reflecting circle	Knudsen. Corn.; Copenhagen
1317	Sextant	Knudsen. Corn.; Copenhagen
1900	Sextant	Knudsen. Corn.; Copenhagen
1947	Sextant	Knudsen. Corn.; Copenhagen
1800	Spectroscope	Knudsen. Corn.; Copenhagen
1893	Station pointer	Knudsen. Corn.; Copenhagen
622	Sunshine recorder	Knudsen. Corn.; Copenhagen
1076	Telescope, refracting	Knudsen. Corn.; Copenhagen
1097	Telescope, refracting	Knudsen. Corn.; Copenhagen
1187	Telescope, refracting	Knudsen. Corn.; Copenhagen
1500	Telescope, refracting	Knudsen. Corn.; Copenhagen
1183	Telescope, terrestrial	Knudsen. Corn.; Copenhagen
1581	Thermograph, bimetal	Knudsen. Corn.; Copenhagen
883	Thunder house	Knudsen. Corn.; Copenhagen
952	Wheatstone's bridge	Knudsen. Corn.; Copenhagen
1598	Z-variometer	Knudsen. Corn.; Copenhagen
1318	Loudspeaker, dynamic	Knudsen, L.; Copenhagen
702	Compass, marine	Koch, Rasmus; Copenhagen
1951	Compass, tell-tale	Koch, Rasmus; Copenhagen
435	Compass, ornamental	Kock, Rasmus; Copenhagen
1054	Air pump, vacuum	Kohl, Max; Chemnitz
964	Ammeter, hot-wire	Kohl, Max; Chemnitz
852	Carbon arc lamp	Kohl, Max; Chemnitz
987	Electric railway	Kohl, Max; Chemnitz
896	Electrometer, Grimsehl	Kohl, Max; Chemnitz
1032	Falling plate apparatus	Kohl, Max; Chemnitz
740	Galvanometer, Weinhold's	Kohl, Max; Chemnitz
1019	Gyro starter	Kohl, Max; Chemnitz
976	Induction coil, Ruhmk.	Kohl, Max; Chemnitz
1332	Leyden jar battery	Kohl, Max; Chemnitz
931	Tuning fork, el.-magn.	Kohl, Max; Chemnitz
838	Tuning fork	Kohl, Max; Chemnitz
1256	Tuning forks	Kohl, Max; Chemnitz
2369	Balance, coin	Koppel, Rud.; Hamburg
1832	Theodolite, simple	Korfitsen, P.; Copenhagen
1089	Bearing dial	Krohn, J.C.; Bergen
1801	Spectroscope	Krüss, A.; Hamburg

1119	Spectroscope, direct	Krüss, A.; Hamburg
1188	Sundial	L. Schou, Will. Nielsen
927	Electric motor	L'Ectricité Ateliers; Paris
48	Almanac	La Carrière, Thomas
2202	Lodestone	Le Maire & fils; Paris
2207	Magnets, set of 12	Le Maire & Fils; Paris
532	Sundial, equinoctial	Le Maire & Fils; Paris
1204	Galvanometer,	Leeds & Northrup; Philadelphia
1206	Galvanometer, mirror	Leeds & Northrup; Philadelphia
1213	Recorder, electronic	Leeds & Northrup; Philadelphia
457	Microscope	Leitz; Wetzlar
791	Microscope, compound	Leitz; Wetzlar
282	Reflecting circle	Lenoir; Paris
813	Sextant, box	Lerebours & Secretan; Paris
1687	Goniometer, Wollaston	Lerebours & Secrétan; Paris
635	Telescope, galilean	Lerebours; Paris
107	Barometer, cistern	Lerra, Ioh; Copenhagen
66	Barometer, wheel	Lerra, Johannes; Copenhagen
515	Compass, deviation	Lesne; Paris
12	Measures, length	Levison, L.; Copenhagen
1052	Radio transm. and rec.	Leybold; Cologne
1516	Theodolite	Leybold; Cologne
1848	Theodolite, educational	Leybold; Cologne
1027	Torsion apparatus	Leybold; Cologne
427	Bearing dial	Lilley & Son; London
1936	Depth sounder	Lilley's patent
218	Station pointer	Lindblad, A.; Stockholm
264	Sextant, aviation	Link Aviation Devices Inc
378	Telescope, refracting	Long, Jas.; London
1300	Air gun	Lorenz; Vienna
398	Bearing dial	Ludolph, W.; Bremerhaven
557	Protractor	Lund & Engelsted; Copenhagen
560	Reflecting circle	Lund & Engelsted; Copenhagen
5	Octant	Lundy, J.F.; Grimsby
269	Compass, tell-tale	Lystrup, Christian; Copenhagen
2365	Calculator, course (?)	Lyth, G.W.; Stockholm
705	Compass, marine	Lyth, G.W.; Stockholm
376	Depth sounder	Lyth, G.W.; Stockholm
1771	Level, telescopic	Læssøe Müller, Th.; Copenhagen
1730	Level, telescopic	Læssøe Müller, Th.; Copenhagen
1737	Level, Y-type	Læssøe Müller, Th.; Copenhagen
1819	Theodolite	Læssøe Müller, Th.; Copenhagen
1748	Theodolite, simple	Læssøe Müller, Th.; Copenhagen
1879	Wedge gauge	Læssøe Müller, Th.; Copenhagen
1115	Measure, volume	M (for Ole Rømer); Copenhagen
2004	Bismar	M.J.D.
2342	Caliper, sliding	Magde(?)
169	Indicator	Maihak, H.; Hamburg
2245	Drawing instruments	Mandern, Carl v.; Copenhagen
2415	Scale rule	Mandern, Carl v.; Copenhagen
2233	Sundial, portable	Mandern, Carl v.; Copenhagen
2414	Topographical circle	Mandern, Carl v.; Copenhagen

2000	Wire recorder	Marconi Telegraph; London
1107	Rheostat	Marconi's Wireless; London
1110	Switchboard	Marconi's Wireless; London
11	Measuring tape	Marcus, Fr.; Stockholm
2234	Sundial, equatorial	Martin, Johan; Augsburg
800	Depth sounder	Massey, Ed.; London
1949	Octant	Matheson & Co; Leith
173	Octant	McMillan & Talbot; London
524	Chronometer, marine	Mercer, Th.; St. Albans
1170	Chronometer, marine	Mercer, Th.; St. Albans
643	Telescope, refracting	Mern, G. & S.; München
1538	Telescope, refracting	Merz & Mahler
576	Alidade, plane table	Merz, G. & S.; München
734	Telescope, refracting	Merz, G. & S.; München
1186	Telescope, refracting	Merz, G. & S.; München
536	Sundial, equinoctial	Messter, Ed.; Berlin
270	Compass, tell-tale	Meyer, F.; Glückstadt
443	Compass, marine	Meyjes Jeremsz; Amsterdam
401	Bearing dial	Middleton & Co; Hartlepool
2231	Diptych, ivory	Miller Lienhart; Nuremberg
472	Barometer, cistern	Molinari, A.; Copenhagen
468	Barometer, cistern	Molinari, A.; Copenhagen
467	Barometer, Huyghen's	Molinari, A.; Copenhagen
469	Barometer, siphon	Molinari, A.; Copenhagen
2446	Barometer, wheel	Molinari, A.; Copenhagen
471	Thermometer, Drebber's	Molinari, A.; Copenhagen
1560	Friction machine	Montville; Copenhagen
10	Compass, marine	Moralee, W.H.; North Shields
700	Compass	Moschino, P.G.; Genova
383	Barometer, cistern	Mowbray; Hartlepool
1914	Compass card	Mylasz, H.I.
343	Compass, compensation	Müller, H. & F.; Trieste
2246	Sundial, equatorial	Müller, L.T.; Augsburg
529	Sundial, equinoctial	Müller, L.T.; Augsburg
662	Sundial, equinoctial	Müller, L.T.; Augsburg
1337	Oscilloscope tube	Müller, Rich.; Braunschweig
68	Watch	Müller, J.H.; Schleswig
660	Sundial, cannon	Møller, C.; Copenhagen
2118	Sundial, horizontal	N.L.V.
950	Millivolt- and Ammeter	Nadir; Berlin
1191	Air pump, vacuum	Nairne, E.; London
2239	Drawing instruments	Nairne, E.; London
1725	Electrostatic gen. frict.	Nairne, E.; London
454	Microscope, chest	Nairne, E.; London
2099	Multiplier, Bennett's	Nairne, E.; London
1974	Octant	Nairne, E.; London
1790	Telescope, gregorian	Nairne, E.; London
1679	Armillary sphere, cel.	Neale; London
1678	Armillary sphere, ter.	Neale; London
1817	Theodolite	Neergaard, Th.A.; Copenhagen
551	Compass, azimuth	Negretti & Zambra; London
1784	Thermometer, deep sea	Negretti & Zambra; London

1346	Sturgeon's disc	Newman, I.; London
1324	Gyro	Newton & Co; London
973	Rectifying valve	Newton & Wright
2392	Barometer, cistern	Nielsen, Carl; Copenhagen
1438	Thermometer, glass	Nielsen, Carl; Copenhagen
1793	Barometer, aneroid	Nissen, J.; Copenhagen
1794	Barometer, cistern	Nissen, J.; Copenhagen
474	Barometer, siphon	Nissen, J.; Copenhagen
2289	Electro-magnetic motor	Nissen, J.; Copenhagen
925	Electromagn. generator	Nissen, J.; Copenhagen
1477	Galvanometer, astatic	Nissen, J.; Copenhagen
1777	Gyro	Nissen, J.; Copenhagen
1017	Gyro, Fessel	Nissen, J.; Copenhagen
1846	Gyro, Fessel	Nissen, J.; Copenhagen
1553	Gyro, incomplete set	Nissen, J.; Copenhagen
1233	Gyro, set	Nissen, J.; Copenhagen
1441	Hydrometer, lactometer	Nissen, J.; Copenhagen
374	Hydrometer, Spendrup	Nissen, J.; Copenhagen
365	Hydrometer, Tralle	Nissen, J.; Copenhagen
1247	Hydrometers	Nissen, J.; Copenhagen
1706	Hygrometer, August	Nissen, J.; Copenhagen
1312	Hygrometer, psychrometer	Nissen, J.; Copenhagen
1245	Hygrometer, wet/dry bulb	Nissen, J.; Copenhagen
1871	Level, mercury	Nissen, J.; Copenhagen
2306	Savard, s machine	Nissen, J.; Copenhagen
1190	Sympiezometer	Nissen, J.; Copenhagen
766	Thermometer, glass	Nissen, J.; Copenhagen
750	Barometer, aneroid	Nissen, J.; Copenhagen
1760	Level, telescopic	Nissen, J. (?);
2421	Hydrometer	Noor, F.W.
2420	Hydrometer	Noor, F.W.
1432	V- and mA-meter	Nordisk Instrumentfabr; Holte
1026	Wave apparatus, Ling's	Nordstedt; Stockholm
2058	Chemicals, antidote box	Nyrop, Camillus; Copenhagen
2375	Ear trumpet	Nyrop, Camillus; Copenhagen
1424	Induction apparatus	Nyrop, Camillus; Copenhagen
1813	Induction apparatus	Nyrop, Camillus; Copenhagen
2213	Faraday's rotation app.	Oechsle, C.F.; Pforzheim
2210	Ørsted's experiment	Oechsle, C.F.; Pforzheim
1554	Pendulum	Oechsle, C.F.; Pforzheim
278	Horizon dip meter	Oertling; Berlin
1211	Calculating machine	Original-Odhner; Aalborg
1901	Chronometer, marine	Otte, Ed.; Altona
556	Planimeter(?)	Otz; Berne
1074	Dynamo	Otzen & Thorstenson; Copenhagen
928	Electromagn. generator	Otzen & Thorstenson; Copenhagen
183	Orrery	Parkes & Hadley's
178	Chronometer, marine	Parkinson & Frodsham
2	Octant	Parnell; London
2166	Compass, marine	Pascall Atkey & Son; Cowes
1209	Galvanometer, Ayrton-Ma.	Paul, R.W.; London
1225	Inductor, variable	Paul, Robert W.; London

577	Astrolabe	Persian(?)
1937	Compass, marine	Petersen, C.F.; St.Pauli
2167	Ruler	Petersen, L.; Copenhagen
2161	Sextant	Petersen, Martin; Svendborg
2171	Sextant	Petersen, Martin; Svendborg
220	Octant	Petersen, W.; Copenhagen
273	Reflecting circle	Petersen, W.; Copenhagen
991	Galvanometer, mov.coil	Phys.Werkstätten; Göttingen
736	Steam engine, sundriven	Phywe; Cologne
989	Tesla apparatus	Phönix
531	Sundial, horizontal	Pierret; Brussels
2158	Chronometer, marine	Pihl, B.; St.Petersburg
2243	Sector	Pindar, Johannes
30	Reflecting circle	Pistor & Martins; Berlin
283	Reflecting circle	Pistor & Martins; Berlin
277	Reflecting circle	Pistor & Martins; Berlin
276	Reflecting circle	Pistor & Martins; Berlin
280	Reflecting circle	Pistor & Martins; Berlin
176	Reflecting circle	Pistor & Martins; Berlin
2336	Barometer, Fortin	Pistor & Nartins; Berlin
2355	Circle, reflecting	Pistor & Schiek; Berlin
2363	Circle, reflecting	Pistor, C.H.; Berlin
1255	Siren	Pixii Pere et Fils; Paris
256	Azimuth mirror	Plath, C.; Hamburg
1	Bearing dial	Plath, C.; Hamburg
1153	Mirror control instr.	Plath, C.; Hamburg
580	Octant	Plath, C.; Hamburg
1173	Quintant	Plath, C.; Hamburg
198	Sextant	Plath, C.; Hamburg
1096	Sextant	Plath, C.; Hamburg
73	Telescope, refracting	Plössl, S.; Vienna
1090	Bearing dial	Polaris; London
548	Alidade, telescopic	Poller; Leipzig
2070	Balance, coin	Poppenberg, J.P.; Blankenstein
1739	Alidade, plane table	Poulsen, H.; Copenhagen
1736	Level, telescopic	Poulsen, H.; Copenhagen
594	Measure, standard fod	Poulsen, H.; Copenhagen
1812	Colour-sense tester	Preisler, F.; Copenhagen
13	Measure, shoemaker's	Preston, E. & Sons; Birmingham
2326	Alidade, telescopic	Raeffle; Berne
2249	Telescope, refracting	Ramsden; London
213	Chronometer, marine	Ranch's, Carl EFTF; Copenhagen
929	Induction coil	Rasmussen, A.; Copenhagen
2225	Induction coil	Rasmussen, A.; Copenhagen
2224	Induction coil	Rasmussen, A.; Copenhagen
960	Milliammeter	Rasmussen E.G.(?); Copenhagen
2248	Circle, repetition	Reichenbach & Ertel; München
2328	Theodolite, transit	Reichenbach; München
1420	Saccharimeter	Reichert, C.; Vienna
507	Globe, celestial	Reimers; Berlin
1703	Hygrometer, Casbois	Renard; Copenhagen
473	Barometer, siphon	Rénard; Copenhagen

400	Bearing dial	Reynolds & Wiggins; London
1582	Chronograph	Richard Frères; Paris
563	Compass, surveyor's	Richer; Paris
1704	Hygrometer, Saussure	Richer; Paris
1236	Compass, proportional	Richter, O.; Chemnitz
455	Microscope, Cuff type	Ring; Berlin
430	Compass, tell-tale	Ritchie & Sons; Brookline Mass
1808	Theodolite	Rosenberg, Th.; Berlin
1766	Theodolite, simple	Rosenberg, Th.; Berlin
1769	Theodolite, transit	Rosenberg, Th.; Berlin
1818	Theodolite	Rosenberg, Th.; Berlin
826	Diffraction grating	Rowland's; Baltimore
1344	Induction coil, Ruhmkorff	Ruhmkorff; Paris
2335	Globe, Moon	Russell; London
506	Globe, terrestrial	Râth
350	Telescope, refracting	Salmoiraghi; Milano
782	Balance, spring	Salter's
2168	Measure, length	Sampson Aston; Birmingham
1465	Magnets, permanent	Sanderson Brothers
2273	Compass, azimuth	Sangaard, O.P.; Copenhagen
775	Balance, hydrostatic	Sartorius; Göttingen
779	Weights, set in box	Sartorius; Göttingen
170	Indicator	Schaeffer & Budenberg
2176	Indicator, Richard	Schaeffer & Budenberg (?)
530	Sundial, portable	Scharapalka; Poland
2133	Hydrometer	Scheutz, C.G.
1249	Hydrometer	Scheutz, C.G.; Copenhagen
585	Quadrant	Schillem
288	Armillary sphere	Schlemmer, Hans;
1780	Pressure gauge	Schlüter, C.F.; Copenhagen
323	Quintant	Schmalcalder; London
480	Saccharimeter	Schmidt & Haensch; Berlin
1782	Saccharimeter	Schmidt & Haensch; Berlin
1386	Spectrometer	Schmidt & Haensch; Berlin
1383	Spectrometer	Schmidt & Haensch; Berlin
497	Armillary sphere	Schotte, E.; Berlin
496	Globe, celestial	Schotte, E.; Berlin
503	Globe, celestial	Schotte, E.; Berlin
689	Globe, terrestrial	Schotte, E.; Berlin
690	Tellurium	Schotte, E.; Berlin
2314	Tellurium	Schotte, E.; Berlin
209	Globe, celestial	Schotte, Ernst & Co; Berlin
1662	Telescope, Newton	Schrader, J.G.; Kiel
519	Compass, portable	Schubert; Freyberg
1998	Draughting rule	Schultz, W.
226	Sextant	Schutz, W.; Copenhagen
1968	Measures, length	Schwartz & Søn; Copenhagen
1625	Ear model	Schwartz, J.A. (?); Copenhagen
555	Graphometer	Schört, Hans Jacob
721	Reflecting circle, Borda	Secretan; Paris
2111	Microscope	Seibert
434	Compass, marine	Selter, D.B.; Amsterdam

203	Barograph, aneroid	Sestrel
289	Clock, astronomical	Siebenhaer, Nocolaus; Schleswig
1491	Morse receiver	Siemens & Halske, Berlin
1198	Ammeter, precision	Siemens & Halske; Berlin
1221	Capacitor	Siemens & Halske; Berlin
1347	Capacitor, standard	Siemens & Halske; Berlin
966	Galvanometer	Siemens & Halske; Berlin
1205	Galvanometer, mirror	Siemens & Halske; Berlin
1378	Galvanometer, mirror	Siemens & Halske; Berlin
977	Interrupter, mercury	Siemens & Halske; Berlin
1072	Morse receiver	Siemens & Halske; Berlin
1117	Morse receiver	Siemens & Halske; Berlin
2277	Morse receiver	Siemens & Halske; Berlin
2219	Resistance box	Siemens & Halske; Berlin
1197	Wattmeter, precision	Siemens & Halske; Berlin
1224	Wheatstone's bridge	Siemens & Halske; Berlin
346	Telescope, refracting	Silberrad; London
811	Barometer, marine	Simon, L.; South Shields
1999	Barometer, cistern	Simon, M.
1982	Barometer, cistern	Simoni, M.; Denmark
538	Sundial, ring	Sisson; London
230	Octant	Smith & Hind; Hartlepool
438	Compass card	Smith & Ramage; Aberdeen
2425	Barometer, cistern	Smith, Jeppe; Copenhagen
172	Sextant	Smith, Jeppe; Copenhagen
793	Spherometer	Smith, Jeppe; Copenhagen
1607	Air pump, vacuum	Smith, Jeppe; Copenhagen
2361	Barometer, marine	Smith, Jeppe; Copenhagen
2332	Protractor, Douglas	Smith, Jeppe; Copenhagen
2346	Quadrant	Smith, Jeppe; Copenhagen
89	Telescope, refracting	Smith, Jeppe; Copenhagen
1776	Worm gear	Smith, Jeppe; Copenhagen
653	Barometer, marine	Smith, Jeppe; Copenhagen
615	Drawing instruments	Smith, Jeppe; Copenhagen
1889	Drawing instruments	Smith, Jeppe; Copenhagen
1705	Hygrometer	Smith, Jeppe; Copenhagen
1181	Hygrometer, Saussure	Smith, Jeppe; Copenhagen
1058	Microscope, lucernal	Smith, Jeppe; Copenhagen
2356	Protractor	Smith, Jeppe; Copenhagen
1664	Quadrant	Smith, Jeppe; Copenhagen
217	Sextant	Smith, Jeppe; Copenhagen
722	Sextant	Smith, Jeppe; Copenhagen
1501	Sextant	Smith, Jeppe; Copenhagen
356	Telescope, refracting	Smith, Jeppe; Copenhagen
640	Telescope, refracting	Smith, Jeppe; Copenhagen
625	Telescope, refracting	Smith, Jeppe; Copenhagen
1658	Telescope, refracting	Smith, Jeppe; Copenhagen
641	Telescope, refracting	Smith, Jeppe; Copenhagen
216	Barometer, marine	Smith; Copenhagen
2343	Caliper, sliding	Smith; Copenhagen
1888	Drawing instruments	Smith; Copenhagen
1860	Rule	Smith; Copenhagen

598	Scale plotting	Smith; Copenhagen
593	Scales, plotting	Smith; Copenhagen
617	Pantograph	Sneewins, Henriques; Leyden
616	Pantograph	Sneewins, Henriques; Leyden
1397	Telescope, reading	Société Genevoise; Genève
1403	Telescope, reading	Société Genevoise; Genève
954	Galvanometer, sine	Sohlberg; Copenhagen
95	Pedometer	Spencer & Perkins; London
6	Octant	Spencer, Browning & Co; London
221	Octant	Spencer Browning & Rust; London
237	Octant	Spencer Browning & Rust; London
233	Octant	Spencer Browning & Rust; London
224	Octant	Spencer Browning & Rust; London
587	Octant	Spencer Browning & Rust; London
720	Octant	Spencer Browning & Rust; London
1920	Octant	Spencer Browning & Rust; London
1971	Octant	Spencer Browning & Rust; London
1948	Octant	Spencer Browning & Rust; London
76	Burning glass, amber	Spengler, Lorenz; Copenhagen
77	Burning glass, amber	Spengler, Lorenz; Copenhagen
1404	Balance, Nernst	Spindler & Hoyer; Göttingen
268	Sextant	Spindler & Hoyer; Göttingen
184	Station pointer	Sprenger, Ed.; Berlin
448	Galvanometer, duplex	St.N.T.S.; Copenhagen
983	Galvanometer, mirror	St.N.T.S.; Copenhagen
980	Galvanometer, mov.iron	St.N.T.S.; Copenhagen
1103	Morse receiver	St.N.T.S.; Copenhagen
922	Morse receiver	St.N.T.S.; Copenhagen
225	Octant	Stalker, D.; Leith
348	Telescope, refracting	Stalker, D.; Leith
2238	Sundial, horizontal	Steensen, St.; Frisenborg
415	Bearing dial	Steger Jr; Kiel
1773	Telescope, refracting	Steinheil; München
1463	Backstaff	Stephen, Alex; Dublin
1515	Balance, chemical	Struers, Copenhagen
483	Centrifugal machine	Struers; Copenhagen
738	Cloud chamber	Struers; Copenhagen
1315	Cloud chamber	Struers; Copenhagen
982	Discharge tube, la Rive	Struers; Copenhagen
979	Galvanometer, mov.coil	Struers; Copenhagen
757	Hydrometer	Struers; Copenhagen
756	Hydrometer	Struers; Copenhagen
1159	Hygrometer, wet/dry bulb	Struers; Copenhagen
943	Magnetic field demonstr.	Struers; Copenhagen
948	Magnetic fields exp.	Struers; Copenhagen
1016	Rotation apparatus	Struers; Copenhagen
1033	Rotation apparatus	Struers; Copenhagen
1028	Wave demonstration	Struers; Copenhagen
1828	Planimeter	Sundby, O.; Copenhagen
1831	Protractor, Douglas	Sundby, O.; Copenhagen
1856	Rule	Sundby, O.; Copenhagen
1890	Rule	Sundby, O.; Copenhagen

1746	Theodolite, simple	Sundby, O.; Copenhagen
2327	Theodolite, simple	Sundby, O.; Copenhagen
124	Quadrant, Gunter	Sutton, H.; London
461	Balance, butyrometer	Sørensen, Ferd.F.; Copenhagen
765	Hydrometer	Sørensen, F.E.; Copenhagen
79	Calender	Tammke, Bernhardus
2130	Barometer, marine	Teathers; Dundee
1322	Phonograph	The Graphophone
1160	Barometer, alt. meter	Thiele, F.A.; Copenhagen
1616	Chondrometer	Thiele, F.A.; Copenhagen
2040	Chondrometer	Thiele, F.A.; Copenhagen
2039	Chondrometer	Thiele, F.A.; Copenhagen
2418	Chondrometer	Thiele, F.A.; Copenhagen
2439	Chondrometer	Thiele, F.A.; Copenhagen
2383	Chondrometer	Thiele, F.A.; Copenhagen
117	Level, surveyor's	Thiele, F.A.; Copenhagen
460	Level, surveyor's	Thiele, F.A.; Copenhagen
2154	Level, telescopic	Thiele, F.A.; Copenhagen
621	Sympiëzometer	Thiele, F.A.; Copenhagen
2055	Telescope, binocular	Thiele, F.A.; Copenhagen
1872	Theodolite	Thiele, F.A.; Copenhagen
182	Calculator, military	Thomsen & Schwarzkopf; Kiel
1163	Slide rule, calculator	Thornton A.G.; England
87	Eclipsareon, Rømer's	Thuret, J.; Paris
49	Planetarium, Rømer's	Thuret, J.; Paris
1577	Spectroscope	Toepfer, O.; Potsdam
725	Nocturnal	Tremeschini; Paris
697	Divider	Treschler, C.; Dresden
696	Knife	Treschler, C.; Dresden
694	Ordinance gauge	Treschler, C.; Dresden
695	Ordinance gauge	Treschler, C.; Dresden
1418	Beam compass	Treschler, Christoff
1751	Level, telescopic	Troughton & Simms; London
2351	Protractor	Troughton & Simms; London
263	Sextant	Troughton & Simms; London
1868	Sextant	Troughton & Simms; London
819	Station pointer	Troughton & Simms; London
2068	Telescope, refracting	Troughton & Simms; London
2164	Telescope, refracting	Troughton & Simms; London
2258	Theodolite	Troughton & Simms; London
234	Octant	Troughton; London
418	Protractor	Troughton; London
127	Sextant	Troughton; London
588	Sextant	Troughton; London
651	Transit instrument	Troughton; London
115	Diptych	Tucher, Thomas; Nuremberg
1166	Rule, rolling parallel	U.W.W.; Birmingham
1918	Scales	Ulrich, A.; Danzig
393	Log, mechanical taffrail	Undén, C.G.; Elsinore
718	Log, mechanical	Undén; Elsinore
244	Octant	Urings, I.; London
187	Star finder	US Naval Ocean. Off.

1457	Transit instrument	Utschneider & Liebherr; Munich
639	Telescope, refracting	Utzschneider & Fraunhofer; Mun.
650	Telescope, gregorian	Veitch, James; Inchbonny
2438	Hydrometers, Tralle	Verein d. Spir.fabrikanten;
2178	Balance	Veritas
1645	Mirror, conical; drgs.	Vind, Aug.
1425	Lens system	Voigtländer & Sohn; Braunsch.
1656	Camera lucida,	Voigtländer, F.; Vienna
1933	Azimuth reflector	Volta
485	El.generator, Wimshurst	Voltana
2173	Drawing instruments	W. & H. C.
830	Camera obscura	W. & S.
2377	Telescope, refracting	Walker, F.; London
801	Depth sounder	Walker, T.; London
175	Log, Walker's 'Harpoon'	Walker, T.; London
716	Log, Walker's 'Harpoon'	Walker, T.; London
1175	Depth sounder, waywiser	Walker, Th. & Son; Birmingham
1174	Depth sounder, waywiser	Walker, Th. & Son; Birmingham
114	Log, Walker's cherub	Walker, Th. & Son; Birmingham
384	Log, Walker's 'Harpoon'	Walker, T.; London
215	Log, mechanical	Walker's Cherub
186	Log, Walker's 'Cherub'	Walker's Cherub
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1088	Log, mechanical	Walker's Neptune; London
2329	Theodolite, simple	Wanschaff, Jul.; Berlin
2255	Theodolite	Wanschaff, Julius; Berlin
790	Microscope, simple	Watkins, Fr.; London
623	Telescope, gregorian	Watkins, J & W.; London
631	Telescope, refracting	Watkins; London
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1981	Scale	Weber, J.
433	Compass, tell-tale	Wedel-Jarlsbergs Patent
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1922	Dip needle	Weilbach, E.; Copenhagen
1172	Magnets, bar	Weilbach, Iohann Philip; Cop.
1086	Bearing sight	Weilbach, Iver C.; Copenhagen
1931	Bearing sights	Weilbach, Iver C.; Copenhagen
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1080	Binnacle, educational	Weilbach, Iver C.; Copenhagen
1081	Binnacle, educational	Weilbach, Iver C.; Copenhagen
1171	Chronometer, marine	Weilbach, Iver C.; Copenhagen
1164	Clinometer	Weilbach, Iver C.; Copenhagen
1162	Compass, Kelvin	Weilbach, Iver C.; Copenhagen
260	Compass, marine	Weilbach, Iver C.; Copenhagen
1904	Compass, marine	Weilbach, Iver C.; Copenhagen
1100	Compass, Thomson type	Weilbach, Iver C.; Copenhagen
1143	Deflector	Weilbach, Iver C.; Copenhagen
1098	Deflector	Weilbach, Iver C.; Copenhagen
1168	Depth sounder	Weilbach, Iver C.; Copenhagen
1092	Dip needle	Weilbach, Iver C.; Copenhagen
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1148	Sextant	Weilbach, Iver C.; Copenhagen

157	Binnacle	Weilbach, Iver; Copenhagen
432	Compass, azimuth	Weilbach, Iver; Copenhagen
1178	Compass, azimuth	Weilbach, Iver; Copenhagen
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1179	Compass, ornamental	Weilbach J.C.; Copenhagen
1155	Compass, portable	Weilbach, J.P.; Copenhagen
1156	Compass, portable	Weilbach, J.P.; Copenhagen
1154	Compass, portable	Weilbach, J.P.; Copenhagen
290	Compass, marine	Weilbach, Johan Philip; Copenh.
1177	Compass, marine	Weilbach, P; Copenhagen
1146	Azimuth mirror	Weilbach; Copenhagen
1863	Compass, azimuth	Weilbach; Copenhagen
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958	Compass, declination	Weitzmann
936	Compass, electro-magn.	Weitzmann
1013	Looping track	Weitzmann
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1774	Archimedian spiral	Weitzmann (?); Hillerød
2409	Ammeter	Weitzmann (Hartmann & Braun)
2410	Voltmeter	Weitzmann (Hartmann & Braun)
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1447	Sonometer	Weitzmann, C.; Frederiksborg
1606	Air pump, vacuum	Weitzmann, C.; Hillerød
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1513	Guinea and feather exp.	Weitzmann, C.; Hillerød
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1063	Steam engine	Weitzmann, C.; Hillerød
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9100 Aalborg

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