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SAMUEL MORLAND, "As I was contemplating..." [Presenting the invention of the Tuba Stentoro-Phonica]

**In English, autograph manuscript on paper with five original pen and ink drawings
England (London), 1670 or 1671**

1 sheet of paper folded into a bifolio, watermark: horn on a shield surmounted by a fleur-de-lys crown, monogram WR (close to Churchill 317; the monogram originated as the personal sign of Wendelin Riebel, a printer who rented a paper mill in Strasbourg during the sixteenth century; his watermarks were later widely imitated and the monogram remained in them as a neat but meaningless termination to the pendant center-line), paper size: Median (cropped 3 mm. from top/bottom margins in total and 12 mm. from each outer margin), the last word on the first and second page is repeated at the top of the following page in the manner of catchwords, no ruling of lines, margins ruled in red ink (justification on the first page of text: 297 x 190 mm., the second page has margins of 7 mm. at the top and both sides, the last page has no ruling), written by Samuel Morland in brown ink in a very clear cursive hand in a single column (33 lines on the first page of text), five very finely drawn trumpets in pen and ink (Fig. I-V), in very good condition, unbound sheet. Dimensions 342 x 233 mm.

Unpublished autograph manuscript by Samuel Morland (1625-1695) presenting his invention of the speaking trumpet, an early form of megaphone. The lively descriptions of the first trials of this object in St. James Park, which were greeted with much excitement, are accompanied by five exquisite pen and ink drawings of the trumpet. It represents an early draft of the invention, fresh from the inventor's mind before the text and drawings were polished for publication, and survives as an important source for the study of natural philosophy and the history of science.

PROVENANCE

1. This is an autograph manuscript by Sir Samuel Morland (1625-1695), English academic, diplomat and inventor, written in London in 1670 or 1671. The document is undated but must have been written in 1670 when he invented the speaking trumpet, or in 1671, before he published the invention in a tract of eight leaves entitled *Tuba Stentoro-Phonica an Instrument of Excellent Use, as Well as at Sea as at Land: Invented and Variously Experimented in the Year 1670 and Humbly Presented to the Kings Most Excellent Majesty Charles II, in the Year 1671*. The English treatise appeared in eleven editions between 1671 and 1983. The manuscript differs significantly from the published work, suggesting that it was written and designed very shortly following the invention in 1670.

TEXT

f. 1, [unfoliated], blank; ff. 1v-2v, [unfoliated], Samuel Morland's autograph manuscript with five original pen and ink drawings about his invention, Tuba Stentoro-Phonica, incipit, "As I was contemplating the fabrick & use of an ordinary Trumpet, it came into mind ... Although I must confess the Wise-Man says There is no new thing under the sun."

The manuscript is written on a sheet of paper folded in the middle. Opening this sheet, Morland's account of the invention begins at the top of the left-hand page, while the drawings

occupy most of the right-hand page. The written account of the various experiments continues below the drawings and on the verso of the second page. Morland begins by explaining his idea for an instrument that would magnify sound:

As I was contemplating the fabrick & use of an ordinary Trumpet, it came into mind, That as a Trumpet augments or magnifies, a single Note or Tone, it might be possible so to contrive an Instrument, as that it might magnify the sound of sillables, words & discourses with equal advantage

The first Tryall I made of this Instrument was about 2 Months since, in St. James Park, where I standing at the end of the Mall next to White Hall, another Gentleman stood at the other end first, & then as farr as the Park wall next to Mrs P. Arlington's, & heard every word I spoke so distinctly, that hee conceived hee could have heard it at twice that dystone. And the sound was so great that the Guard at White Hall was alarmed, & sent out a serjant & 3 files of Musquetteers to apprehend mee (it being something late) for making disturbance in the king's park.

The text continues with an account of the second trial, which took place in the presence of the king, resulting in the intervention of the king's Horse-Guard, who heard the trial from a distance, mistook the word "further" for "murther," and came at a great clip to rescue the king. Morland explains the range of the instrument, which was over a mile, and the military and naval uses that he suggested for it, and completes his explanation about the speaking horn by instructing that the instrument should be held close to the mouth for it to work correctly. At the conclusion of his manuscript Morland stated that he had also sent to the king two "Hearing-Instruments, which being applyed to both ears at a time, do very much magnify sounds." He admits that it is not a new invention but might prove to be an improved version (in fact, Robert Hooke had presented his first model of the otacousticon (ear trumpet) in glass at a Royal Society meeting in 1668; Gouk 1982, p. 163).

The Arlington House, the property, which Morland mentions in St. James Park, where the trials were held, was leased from the king by Henry Bennet, 1st Earl of Arlington. In the centuries that followed it was turned into Buckingham House, later Palace, which would become the official London residence of the British monarch.

Our manuscript represents an early and unpublished account of Morland's invention: the text and the hand-drawn designs differ significantly from the published text (*Tuba Stentoro-Phonica*, 1671, and Online Resources). In the published account of his invention Morland included a philosophical discussion on the nature of sound. Morland's invention followed a decade of interest in sound and acoustics in England in the 1660s, as is demonstrated by the scientific activities of the first members of the Royal Society, whose meetings and experiments Morland attended and participated in, despite being a non-member (Gouk, 1982). Morland's invention of the speaking trumpet was reviewed in the *Philosophical Transactions* of the Royal Society and was compared to Isaac Newton's reflecting telescope, invented about the same time, as it was recognized that both used the principle of reflection (Gouk, 1982, pp. 164-165).

The King was impressed by Morland's invention and had several speaking trumpets made for use in the navy (Gouk, 1982, p. 164), and the invention was also commercialized and offered for

sale; the 1671 publication announced that "speaking trumpets of all sizes and dimensions are made and sold by Mr Simon Beal[e], one of His Majesty's Trumpeters in Suffolk Street" (Byrne, 1966, p. 83, n. 21). Beale was not the only provider of Morland's trumpet: a French translation of Morland's book, published in London in the same year as the original text, in 1671, was prefixed with an advertisement informing that his speaking trumpets could be purchased from Moses Pitt, a bookseller in St. Paul's church yard, for the price of £2. 5s (Halliwell-Phillipps, 1838, p. 15).

Morland's autograph manuscript is written in a very clear handwriting and the language, Early Modern English, is easily comprehensible to the modern reader, despite the occasional difference in orthography, such as the long vowels ("bee," "mee," "hee"), the double consonants ("tryalls," "several," "shutts," "metal," "gott," "farr," "fabrick"), the inversed vowels ("besieged," "peice"), the final remnant "e" ("heare," "calme"), and the interchanged "i" and "y" ("sillables," "magnified," "payr," "playn," "tryall," "applied," "dystance"). The most eye-catching feature of the language is the orthography of the definite article "the," which was written with the letter thorn followed by an 'e' in superscript. The thorn, pronounced as 'th' (and later replaced by "th") resembles in handwritten scripts, as seen here, a letter 'y'.

Samuel Morland began his career as an academic in Cambridge, becoming an accomplished mathematician and Latinist (and Fellow of Magdalene College in 1649), before he entered the public service. In 1653-1654 Morland participated on a diplomatic mission to Sweden, and on his return to England started working as an assistant to John Thurloe, the secretary of Oliver Cromwell. While participating in espionage on the side of the Commonwealth, he became disillusioned after learning of a plot to assassinate King Charles II, and changed sides, supporting the Restoration as a double agent. On the eventual Restoration of Charles II in 1660, Morland was made "Master of Mechanics" to the King, in which role he invented and constructed machines mainly destined for managing the water supply in the royal residences. He spent the rest of his life with mechanical experiments and invented, notably, the plunger pump (1675) and worked on calculations that would advance the later invention of a steam engine. Morland's inventions included various calculating machines, as well as the speaking trumpet introduced in our manuscript. Morland's correspondence and papers are at the Lambeth Palace Library (MS 931) and the British Library (Harley MS 5771, Add. MSS 4279, 4393, 4417 passim, and the letters written to Thurloe in 1655-1656, Add. MS 4365). The *Collectio Vocabulorum quorundam* that Morland wrote on some 50 pages and offered to Queen Christina of Sweden in 1654 is now at the Vatican Library, MS Reg. lat. 1434.

LITERATURE

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Dickinson, H. *Sir Samuel Morland: Diplomat and Inventor*, Cambridge, 1970.

Gaudriault, R. *Filigraanes: et autres caractéristiques des papiers fabriqués en France aux XVIIe et XVIIIe siècles*, Paris, 1995.

Gouk, P. "Acoustics in the Early Royal Society 1660-1680," *Notes and Records of the Royal Society of London* 36:2 (1982), pp. 155-175.

Halliwell-Phillipps, J. *A Brief Account of the Life, Writings, and Inventions of Sir Samuel Morland, Master of Mechanics to Charles the Second*, Cambridge, 1838.

Morland, S. *Tuba Stentoro-Phonica an Instrument of Excellent Use, as Well as at Sea as at Land: Invented and Variously Experimented in the Year 1670 and Humbly Presented to the Kings Most Excellent Majesty Charles II, in the Year 1671*, London, 1671.

ONLINE RESOURCES

Samuel Morland on Wikisource

https://en.wikisource.org/wiki/Morland,_Samuel_%28DNB00%29

Samuel Morland, *Tuba Stentoro-Phonica...*, 1671, in Oxford Text Archive

<http://downloads.it.ox.ac.uk/ota-public/tcp/Texts-HTML/free/A51/A51386.html>

Samuel Morland, pages from *Tuba Stentoro-Phonica...*, 1672 (National Trust)

<https://www.ntprints.com/image/359491/pages-from-tuba-stentoro-phonica-an-instrument-of-excellent-use-as-well-at-sea-as-at-land-by-samuel-morland-london-1672-an-account-of-a-speaking-trumpet-presented-to-charles-ii-in-1671-part-of-the-springhill-library-collection>

W. Churchill, *Watermarks in paper in Holland, England, France, etc. in the XVII and XVIII centuries and their interconnection*, Amsterdam, 1935

<https://archive.org/details/b31345736/mode/2up>

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