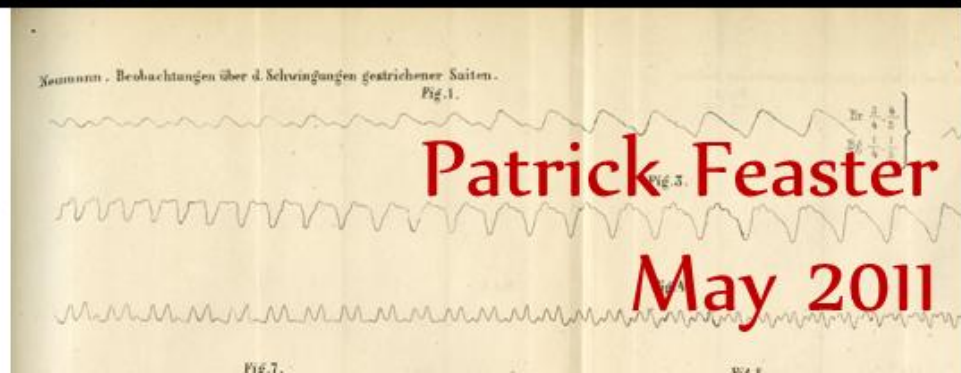
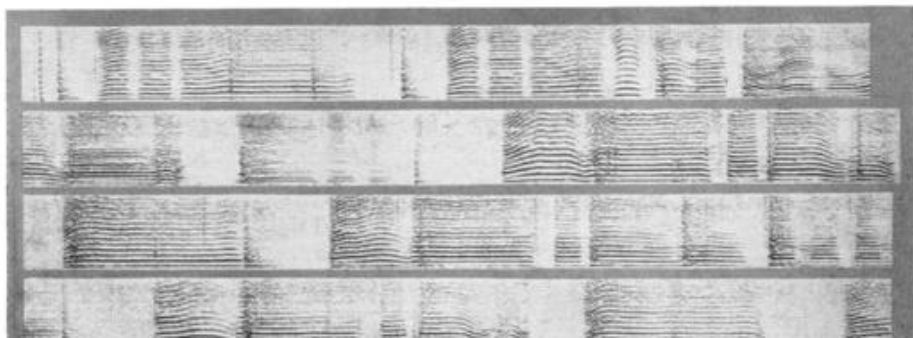
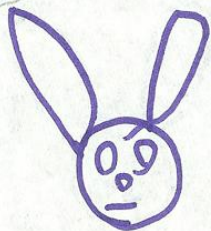


Phonogram Images on Paper 1250-1950





SIDE I

FOR NO NOT ME 6104
2V0T0FTHE BLOP618P
2V MISTTOUN6E
HG VMY BV NY2040

REV VICTOR

OLD SONGS

SIDE 1

1 IV BEN WRING ON THE RAILROAD
2 THE HOUS AND BARN
END IS YES
HUNTS COME
ZARM AND M S G
6009 NUMBER



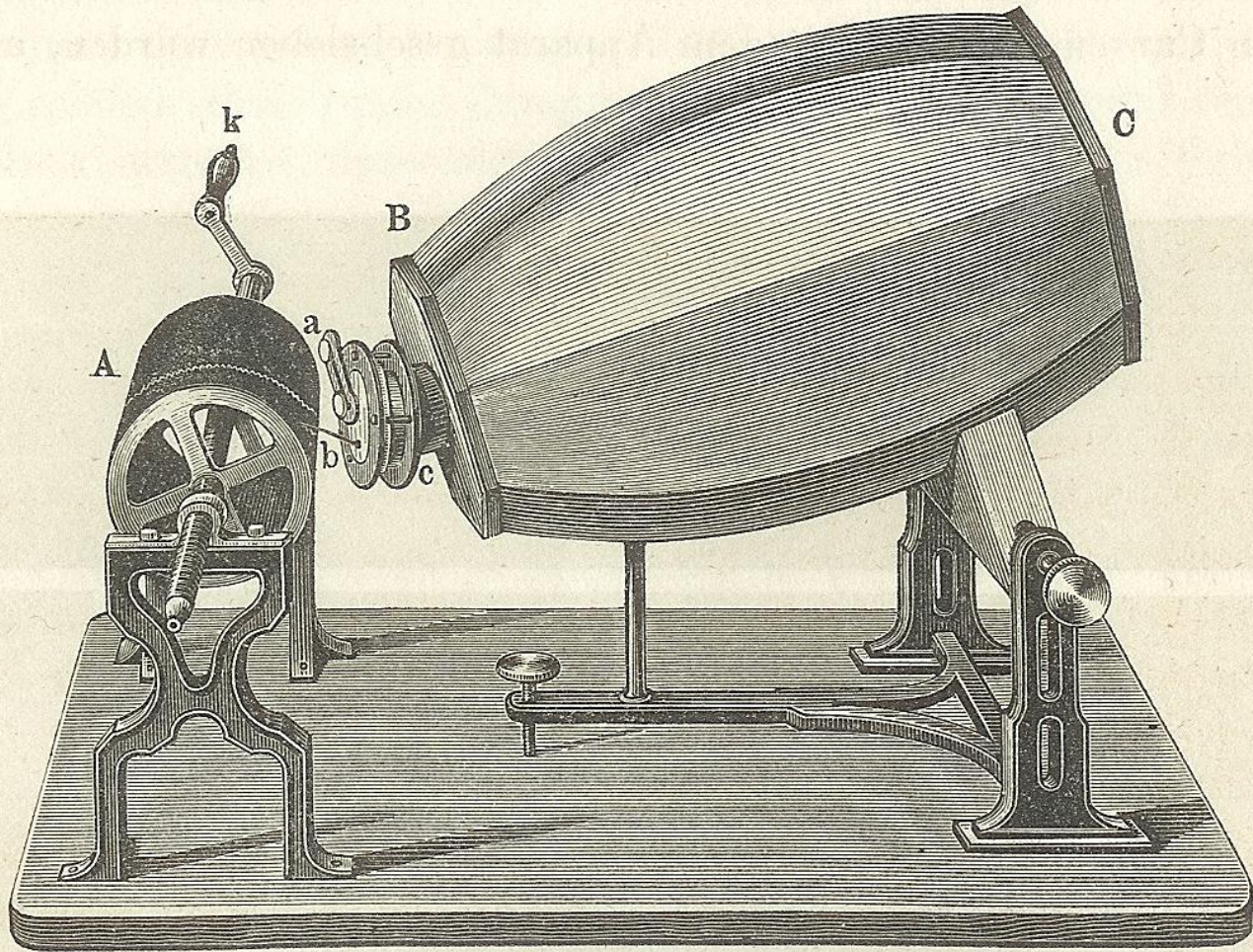
CAPUTO

YOU NEVR
GET SHME
SIDE THE BETOLS

1 YOU NEVR GET SHME
2 SARGINT PEERS DON LEHART CLVBAND
ELDO SEPTHE SCP WIS DIMPNIS
4 HAV ULPTL HELPERVFR ENDS
7 MEN MP STR MV STRA
6 POLE SENFAM



Fig. 545.



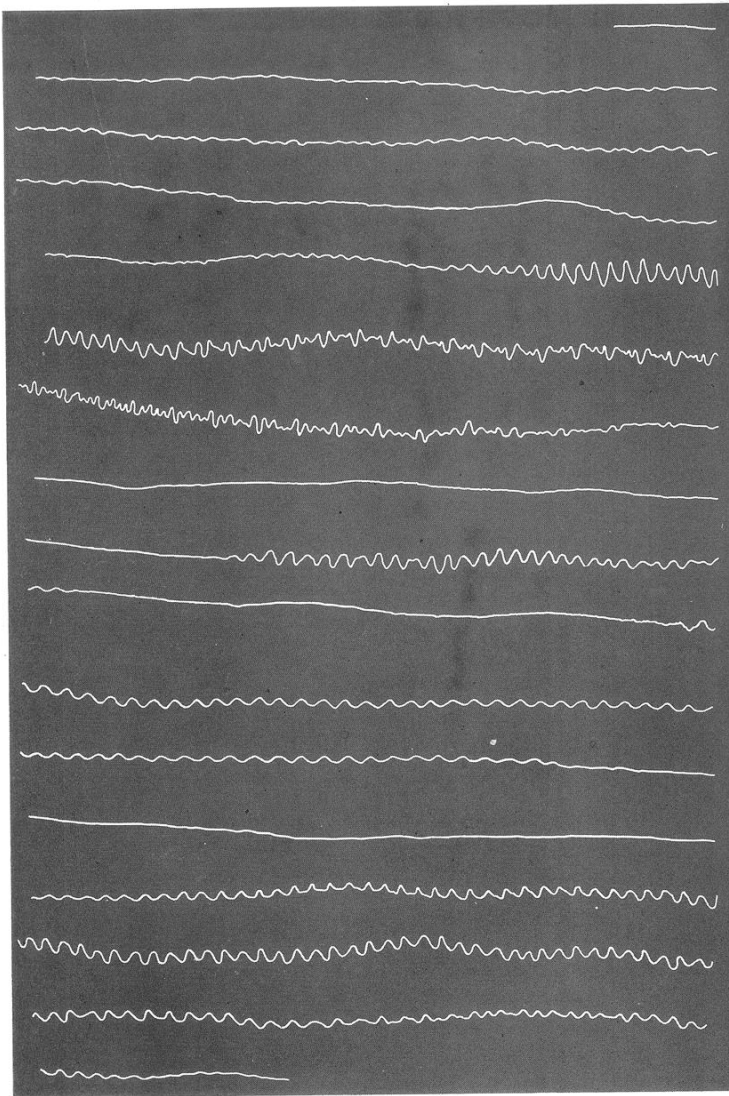


Fig. 14(a) — The words “Who’ll be the parson?” from the story of Cock Robin, as shown in Scripture’s wave records.

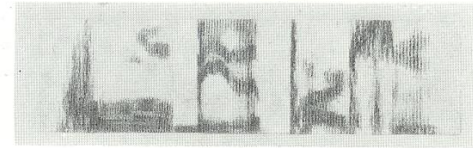


Fig. 14(b) — The words “Who’ll be the parson?” as shown in visible speech

Tongue-twisters

So-called “tongue-twisters” might be investigated to advantage by patterns of visible speech. One of these difficult combinations of sounds, “*She sells sea shells*” is shown in Fig. 15. While the individual word units may be articulated easily, in rapid continuous speech the articulatory movements tend to become awkward and substitutions for one or more sounds or repetitions of sounds are common. Visible patterns may help in following the shifts in articulation and the telescoping of movement that take place during rapid repetitions of such phrases.



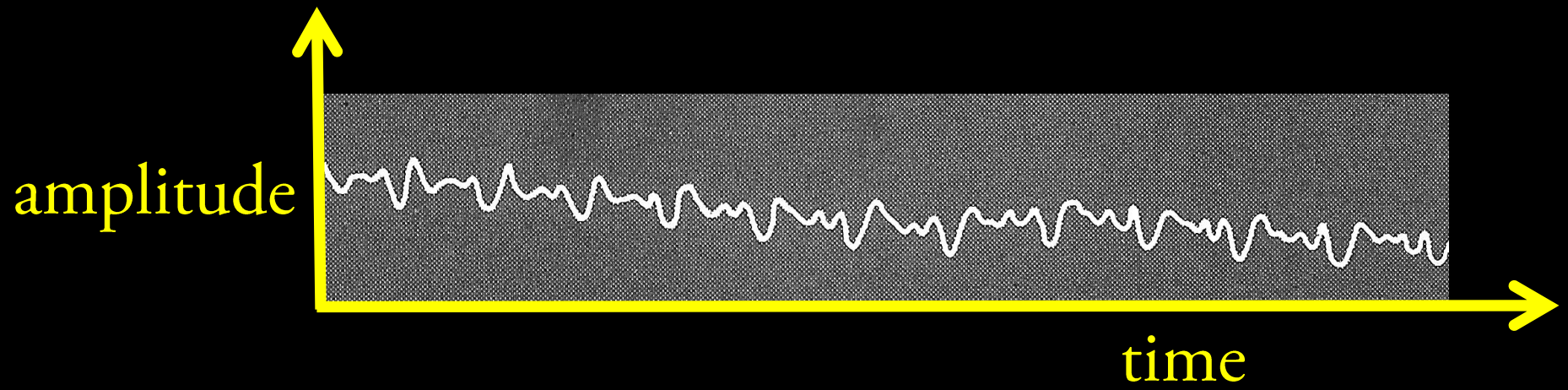
Fig. 15 — Pattern of the words, “She sells sea shells”.

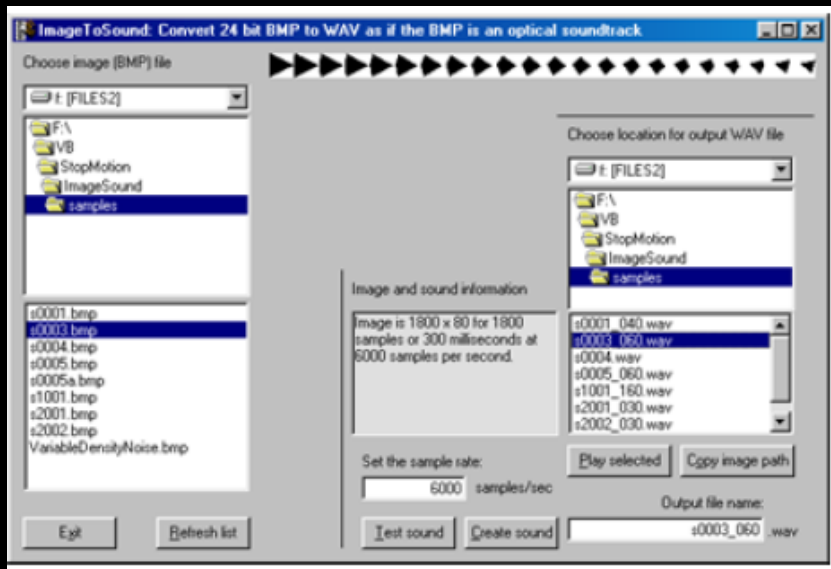
Vocoder speech

By means of an instrument known as the “vocoder”*, speech is converted to a series of fluctuating currents that may be transmitted to a distant point and there used to reconstruct the sounds artificially. Voicing is derived from a relaxation oscillator, and fricative sounds from an electronic noise source. Bands of these sounds are combined in automatically controlled amounts to produce the artificially formed speech. Such speech produced by one type of vocoder is illustrated by Fig. 16.

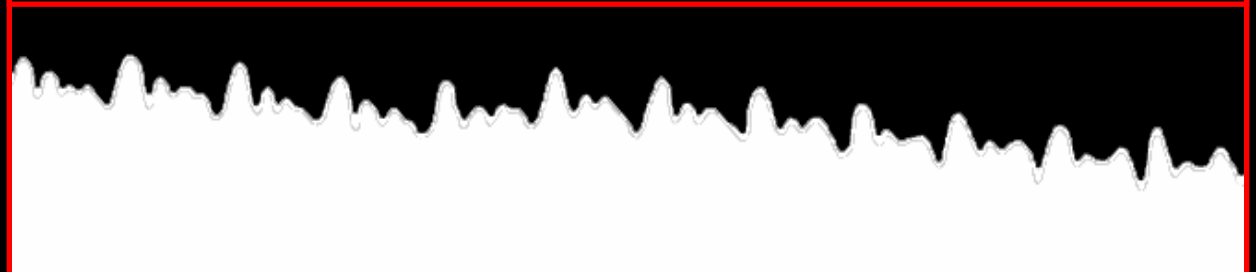
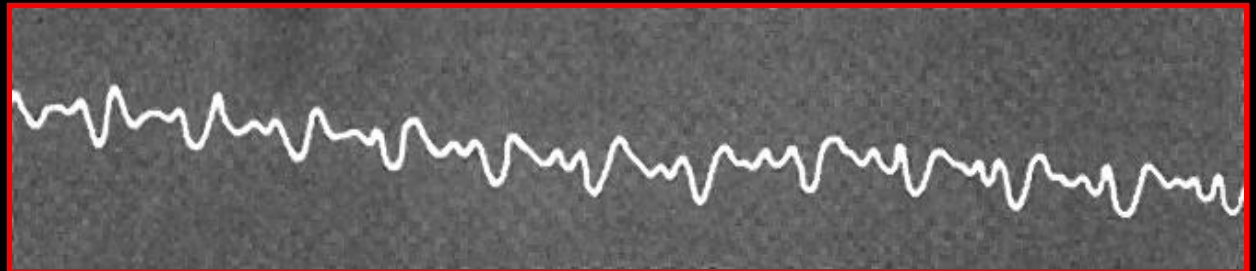
* “Remaking Speech”, Homer Dudley, Journal of Acoustical Society, Vol. 11, p. 169 (1939).

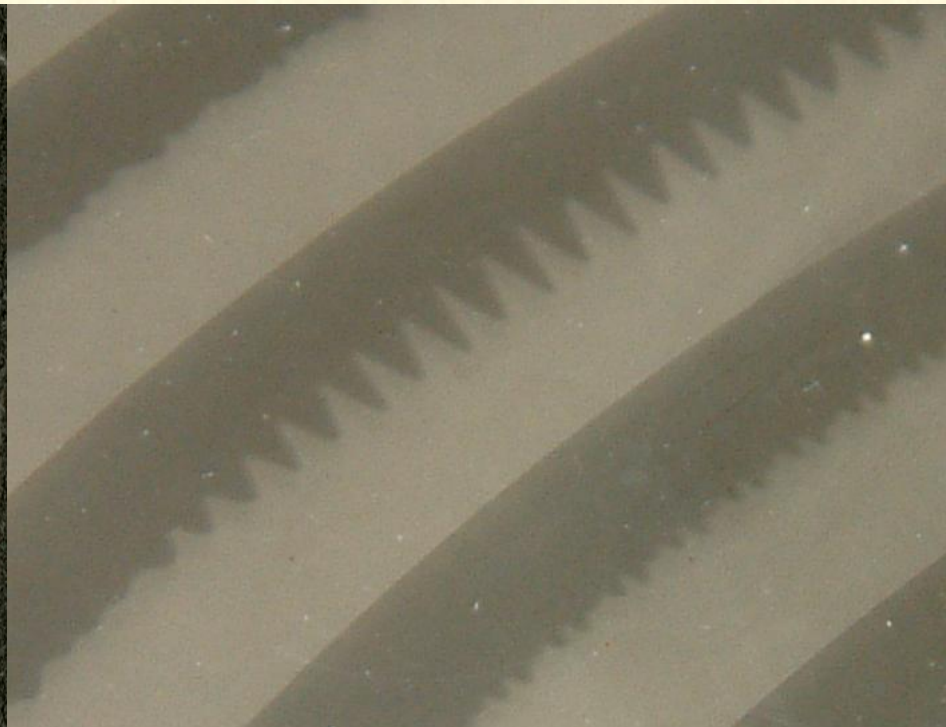
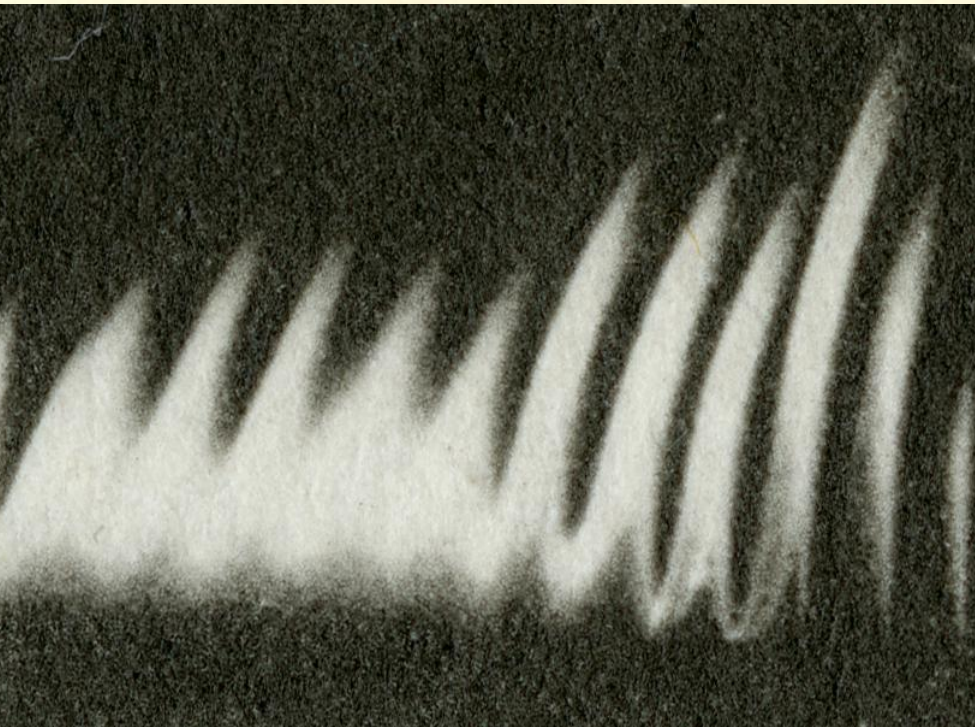
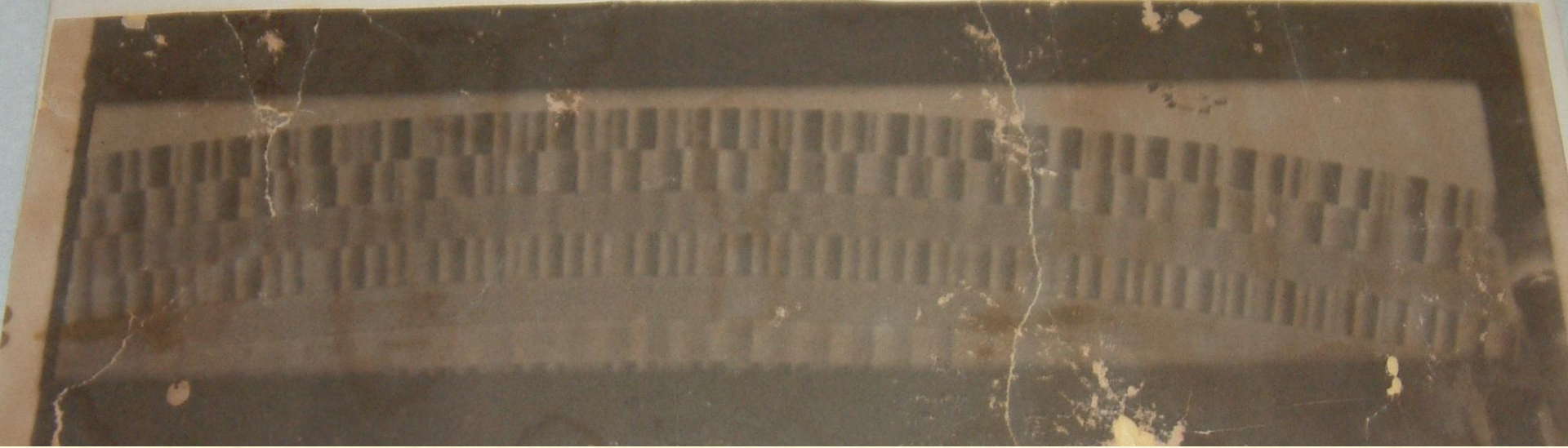
“Who’ll be the parson?”

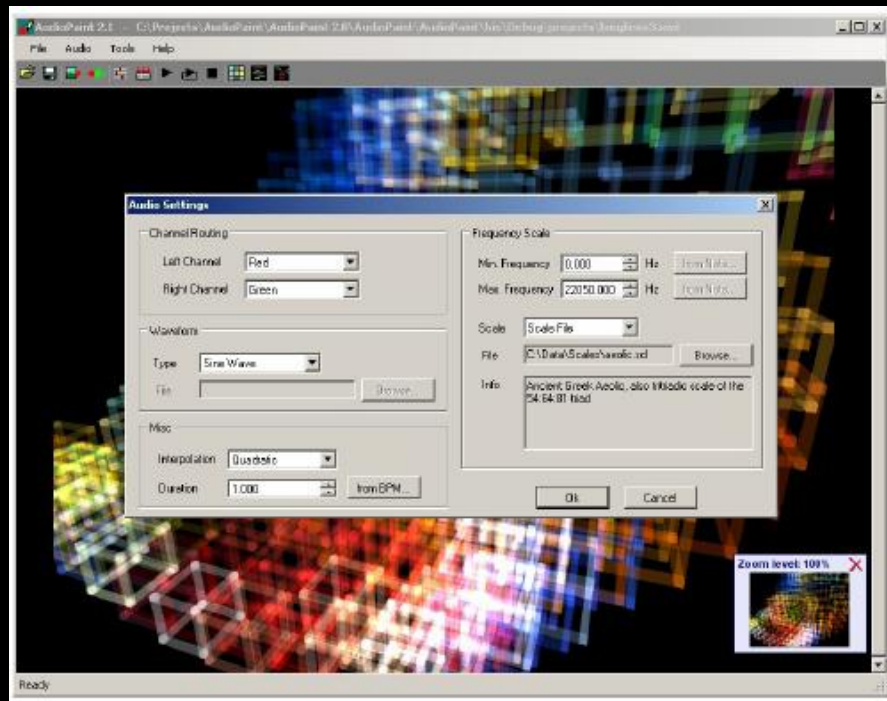
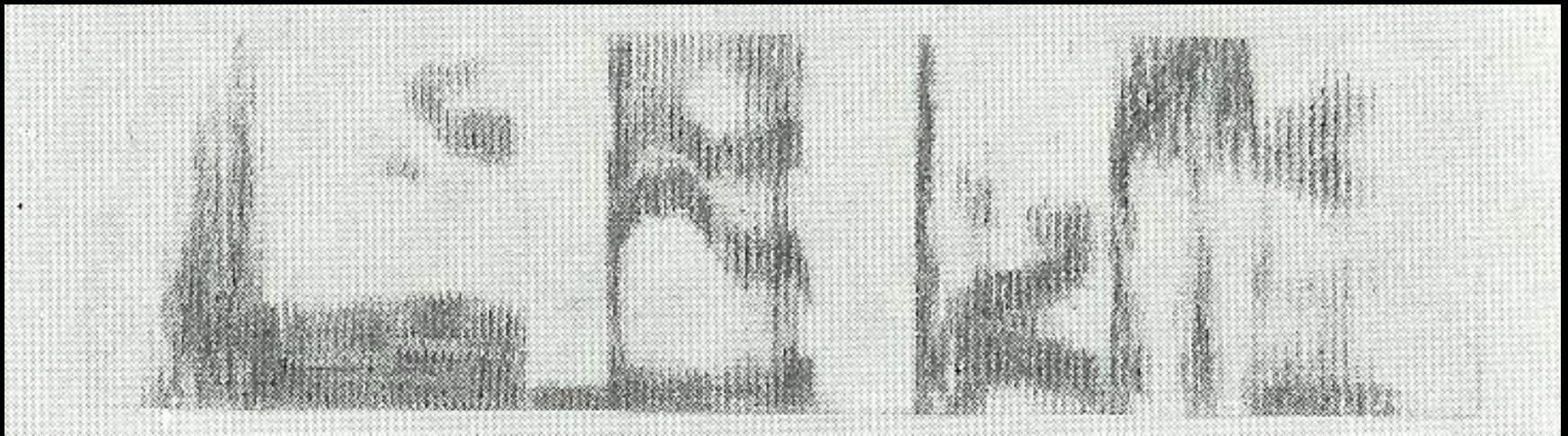




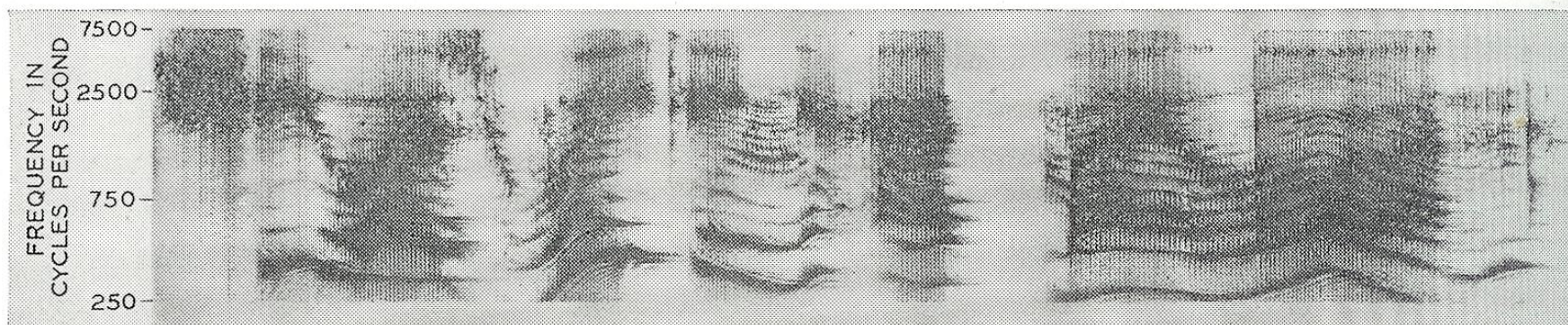
ImageToSound







AudioPaint



*Fig. 1 — Logarithmic scale pattern of the words,
“She was waiting on my lawn”.*

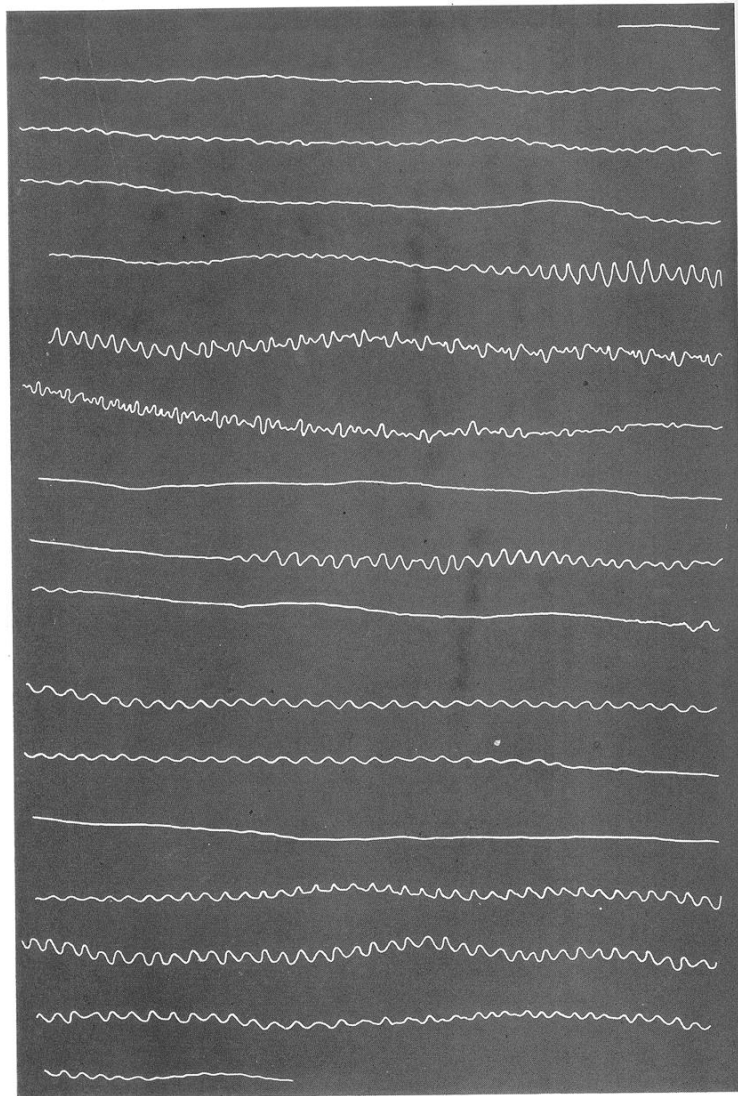
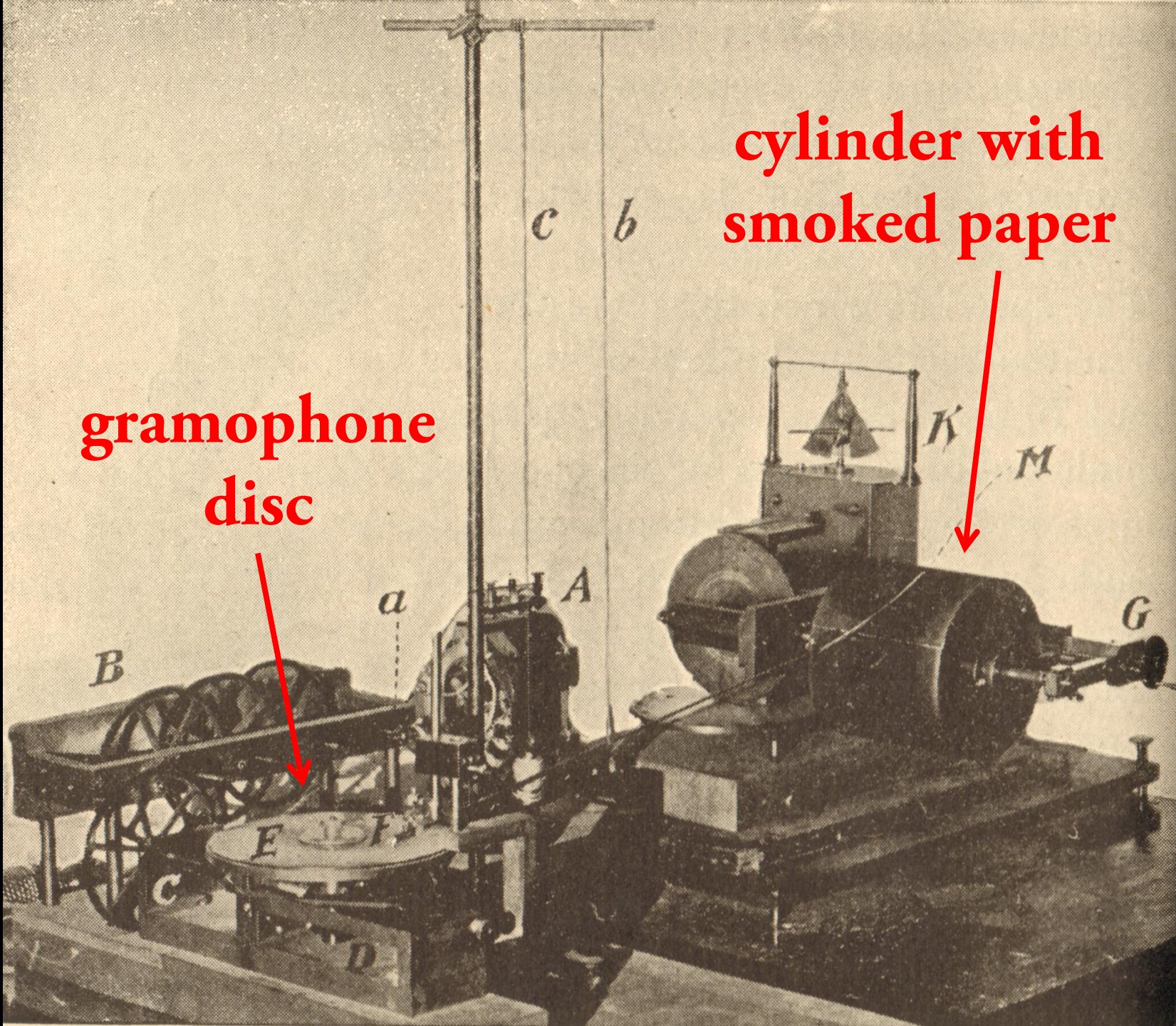


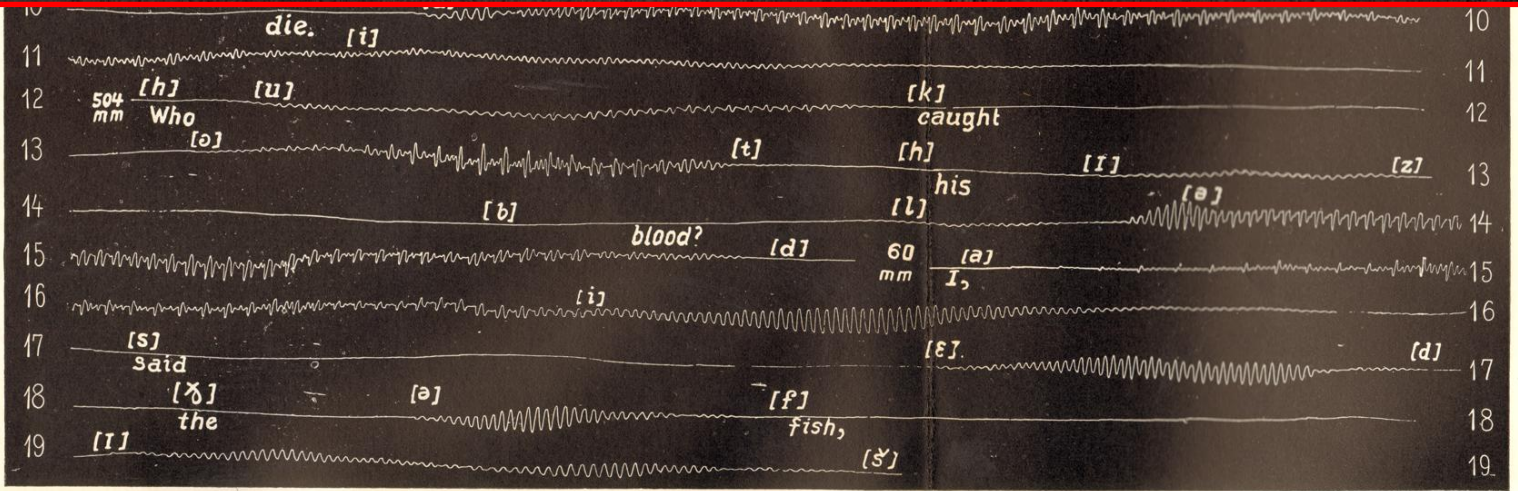
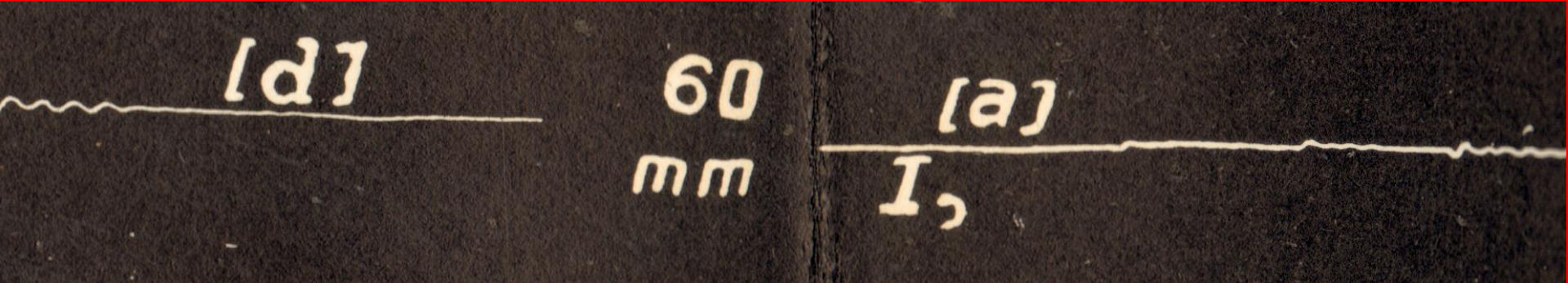
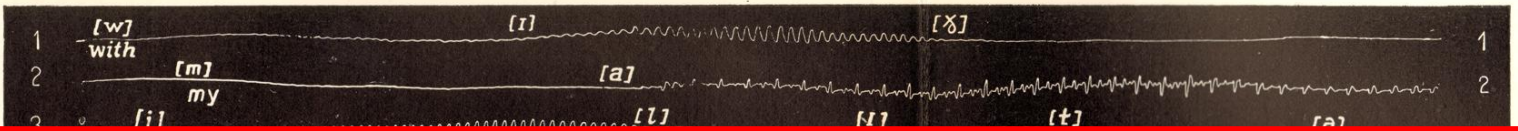
Fig. 14(a) — The words "Who'll be the parson?" from the story of Cock Robin, as shown in Scripture's wave records.

Edward Wheeler Scripture

gramophone disc

cylinder with smoked paper





(1mm. = 0.0016s.)

CURVES FROM "COCK ROBIN."

“With my little eye I saw him die.
 Who caught his blood? I, said the fish....”

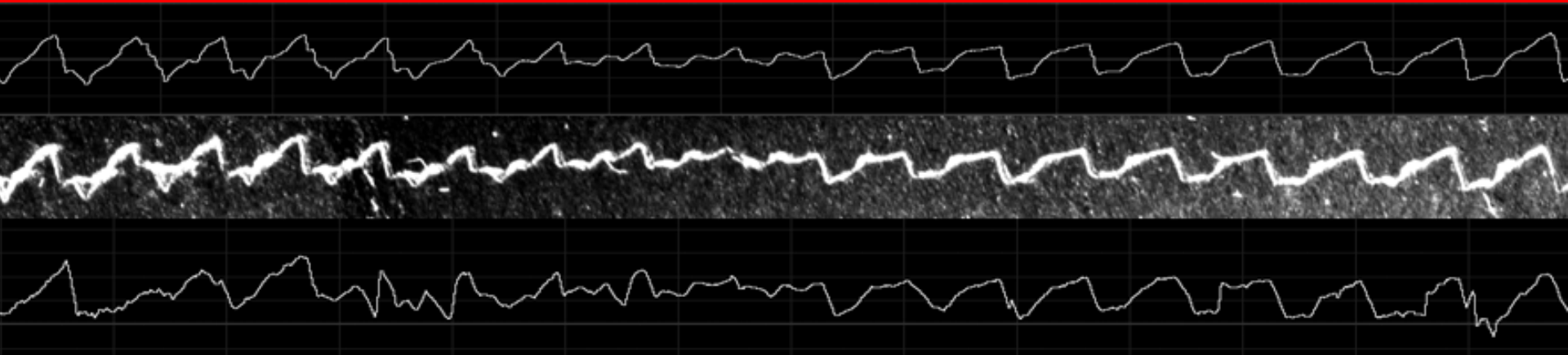
Au Clair de la Lune



9 April 1860

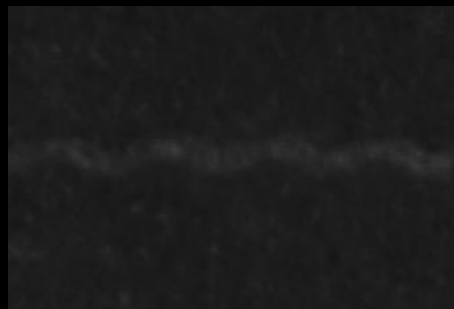
Au Clair de la Lune

2011

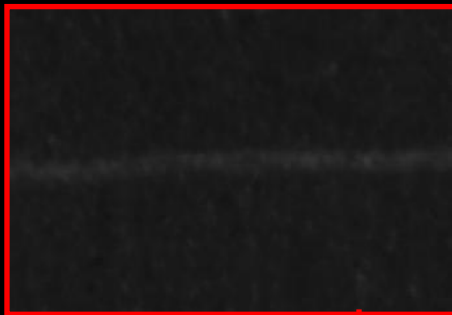


2008-9

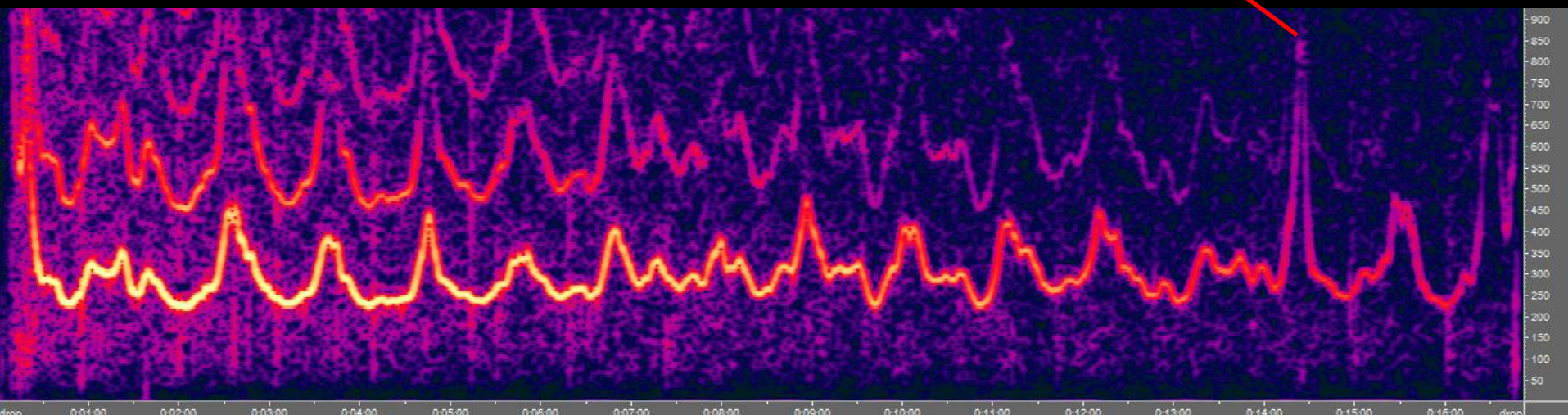
9 April 1860



tuning fork



voice



au

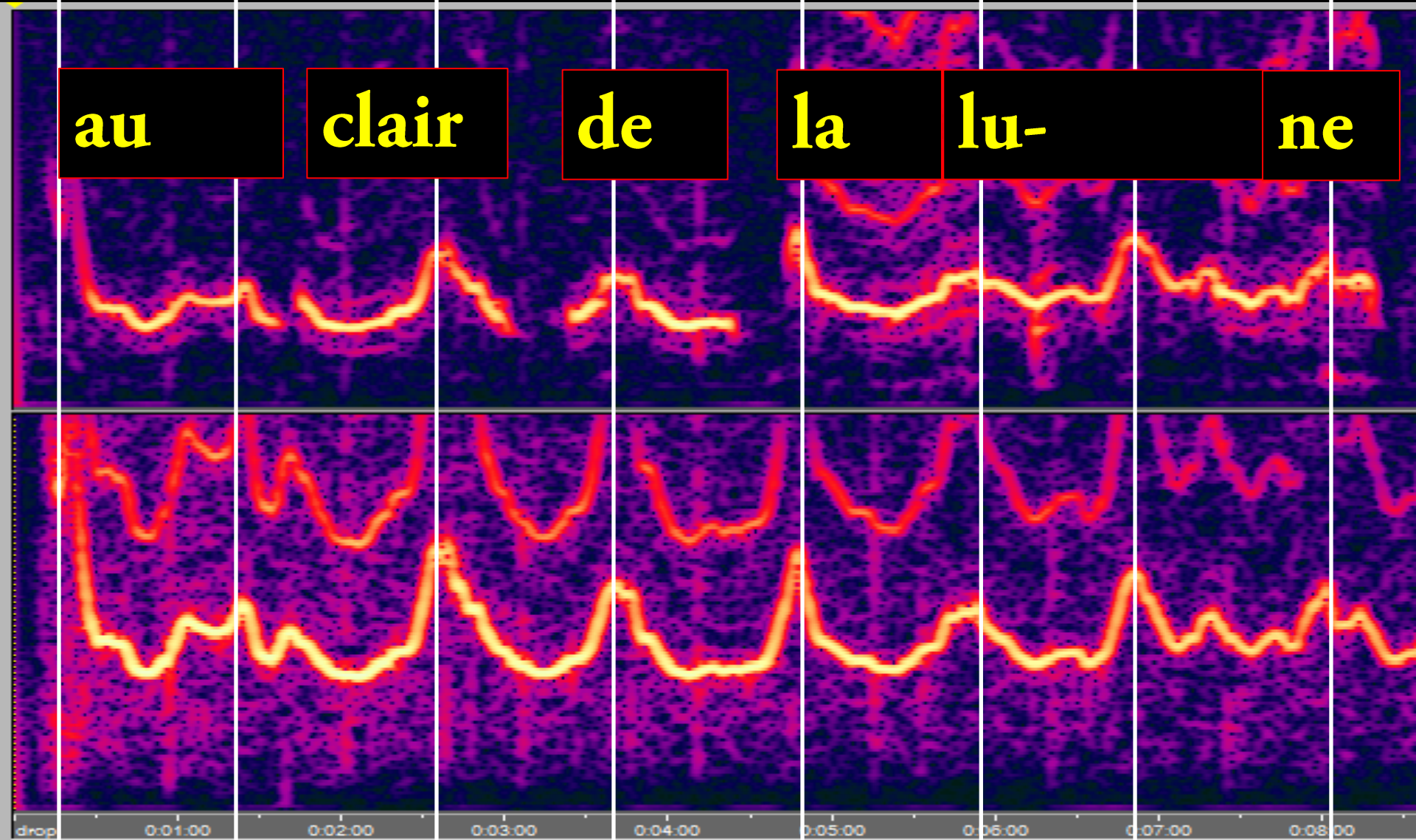
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Pier-

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0:13:00

0:14:00

0:15:00

0:16:00

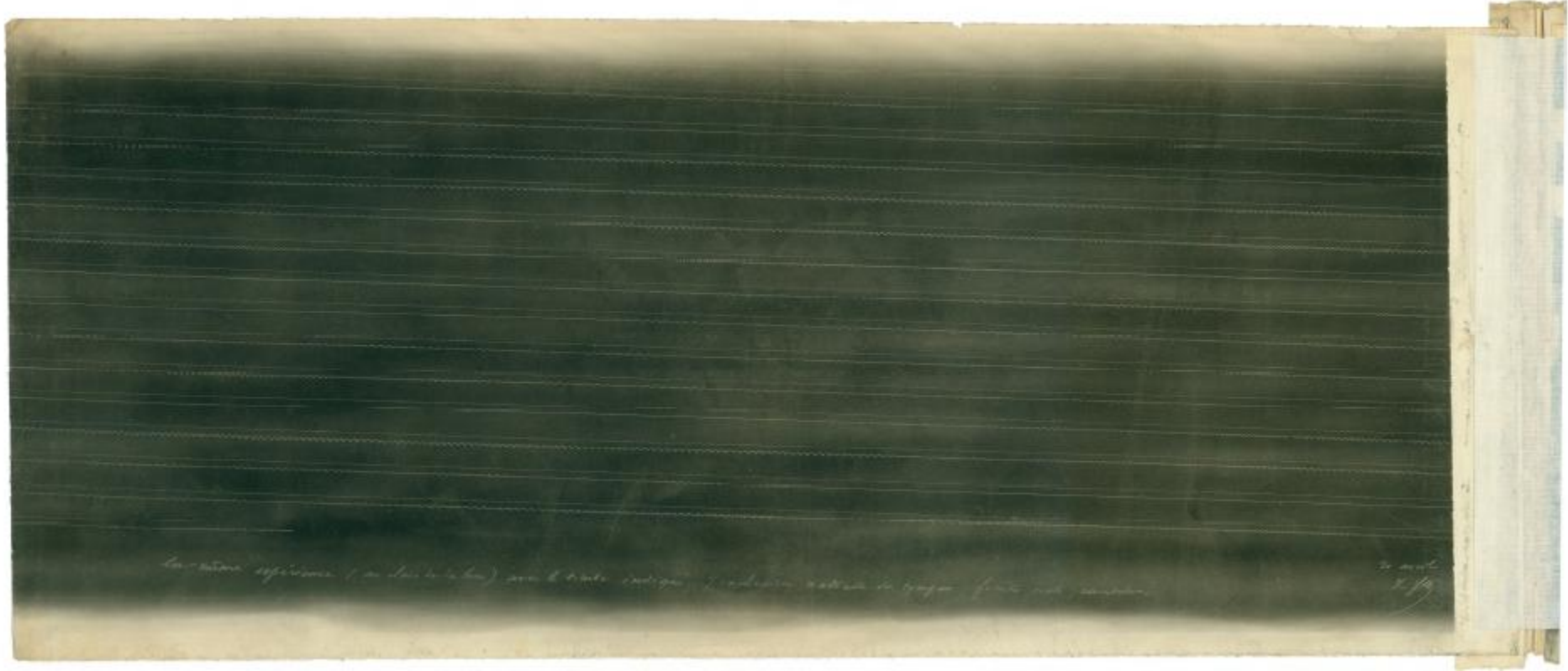
droop

Au Clair de la Lune



9 April 1860

Au Clair de la Lune



20 April 1860

mon

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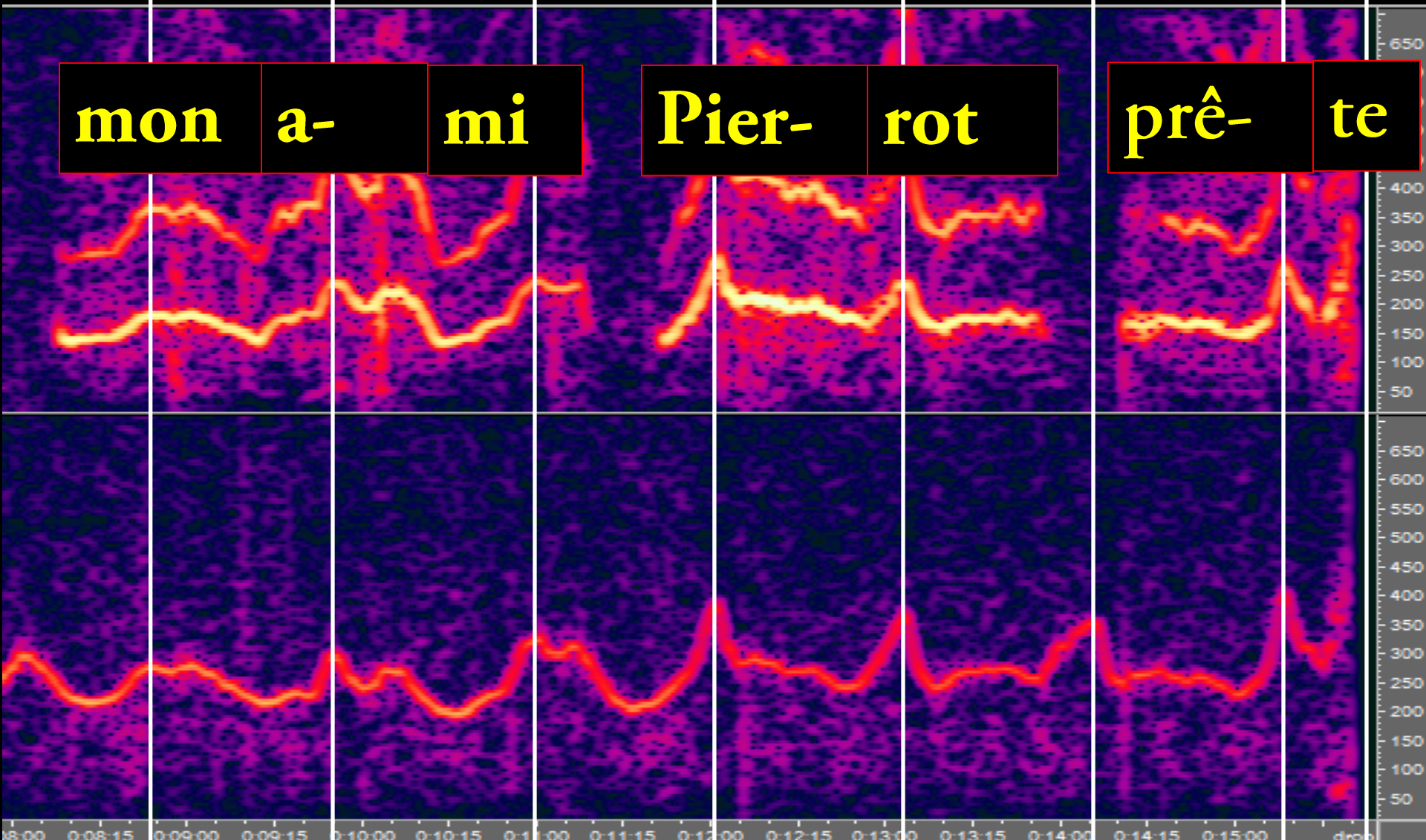
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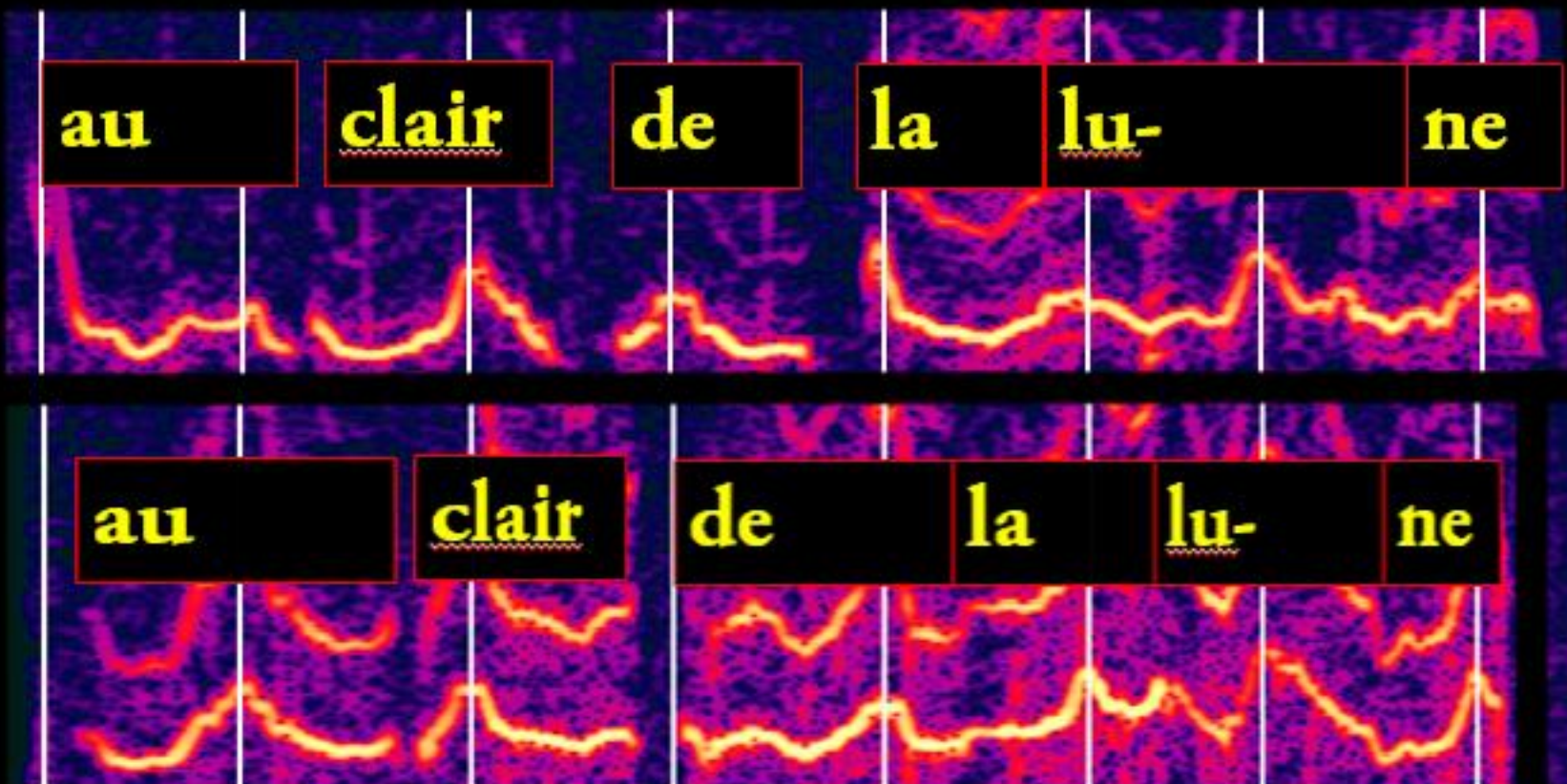
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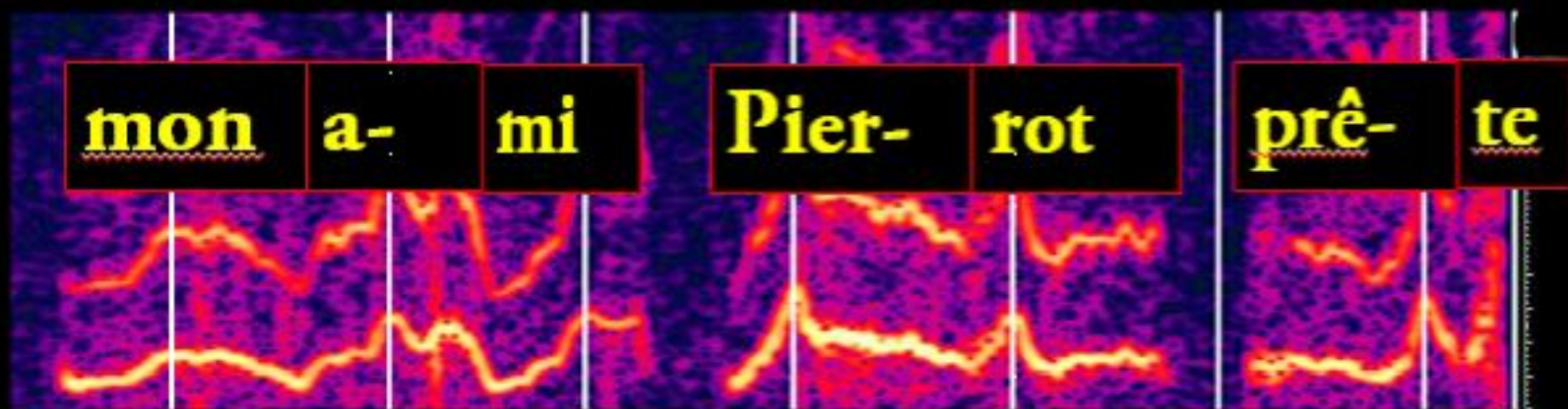
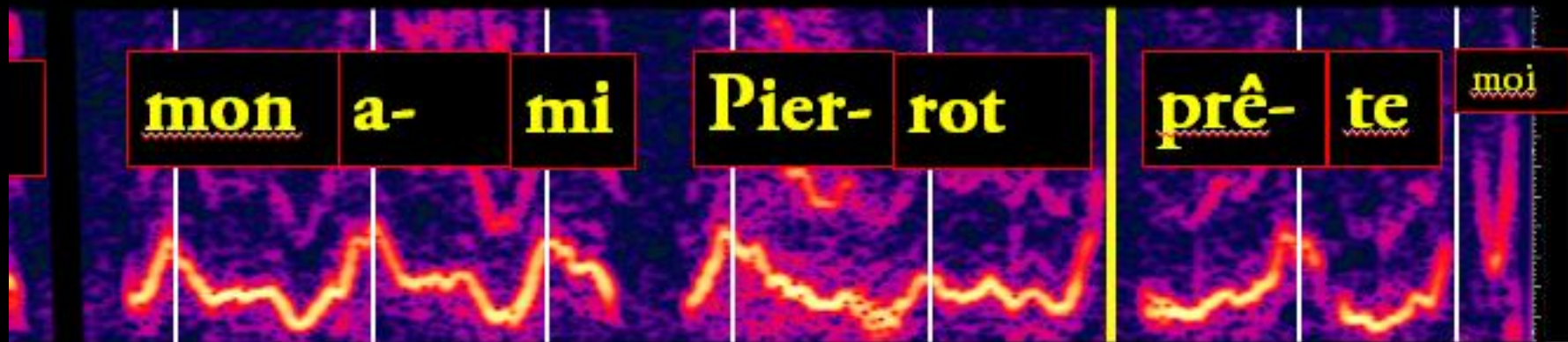
mi

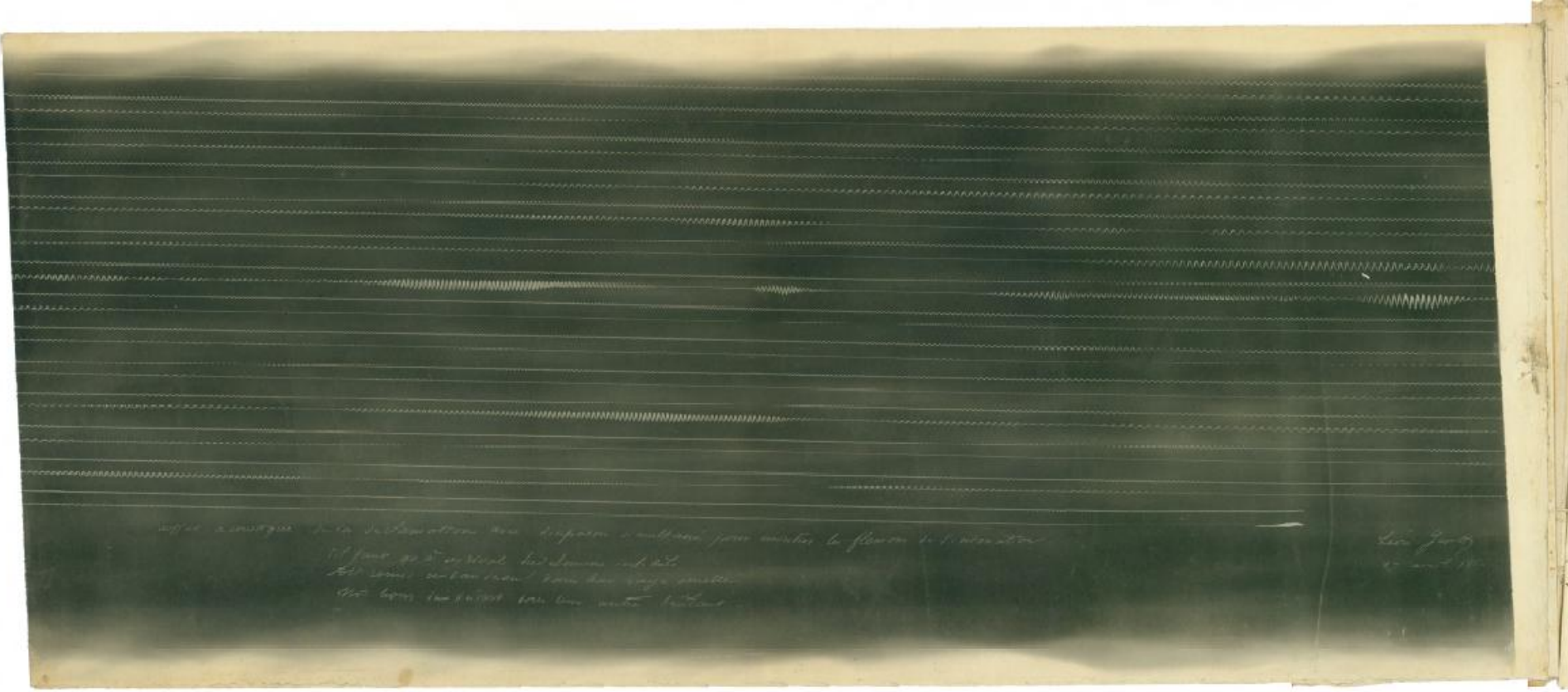
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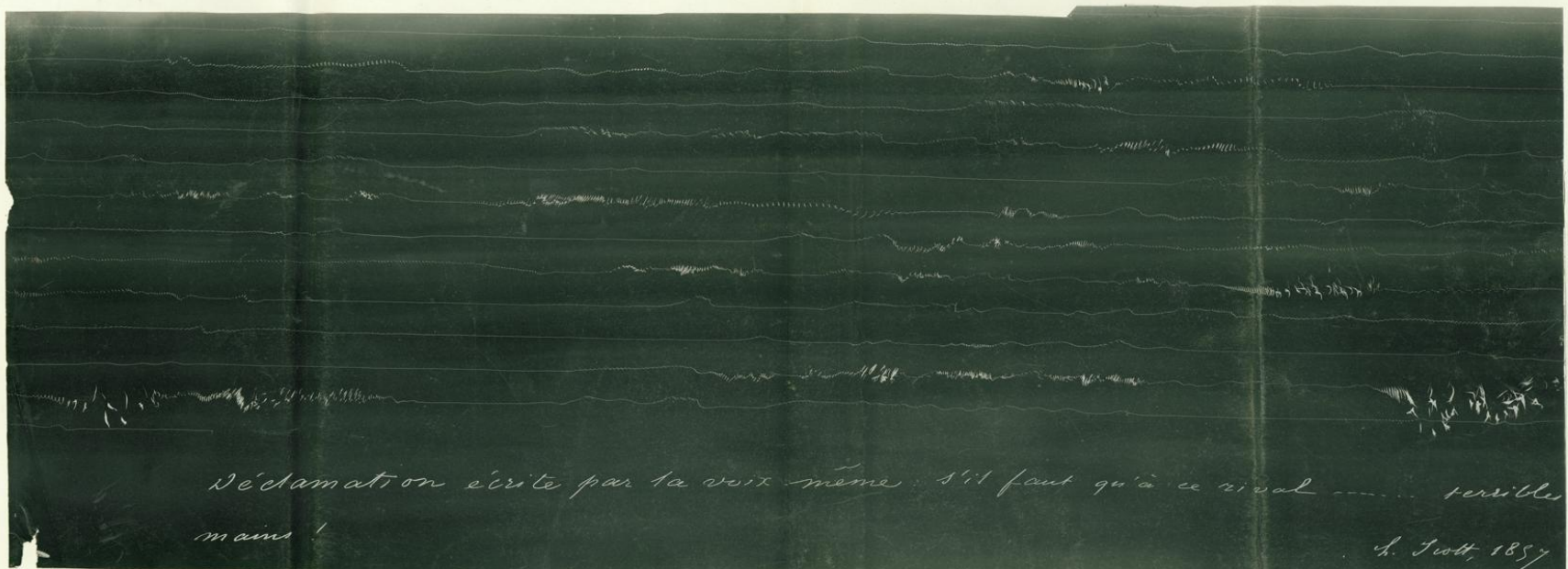
te





S'il faut qu'à ce rival Hédelmone infidèle
Ait remis ce bandeau! Dans leur rage cruelle
Nos lions du désert, sous leur antre brûlant....

17 April 1860



Déclamation écrite par la voix même. S'il faut qu'à ce rival terrible
mains!

H. Jott, 1857

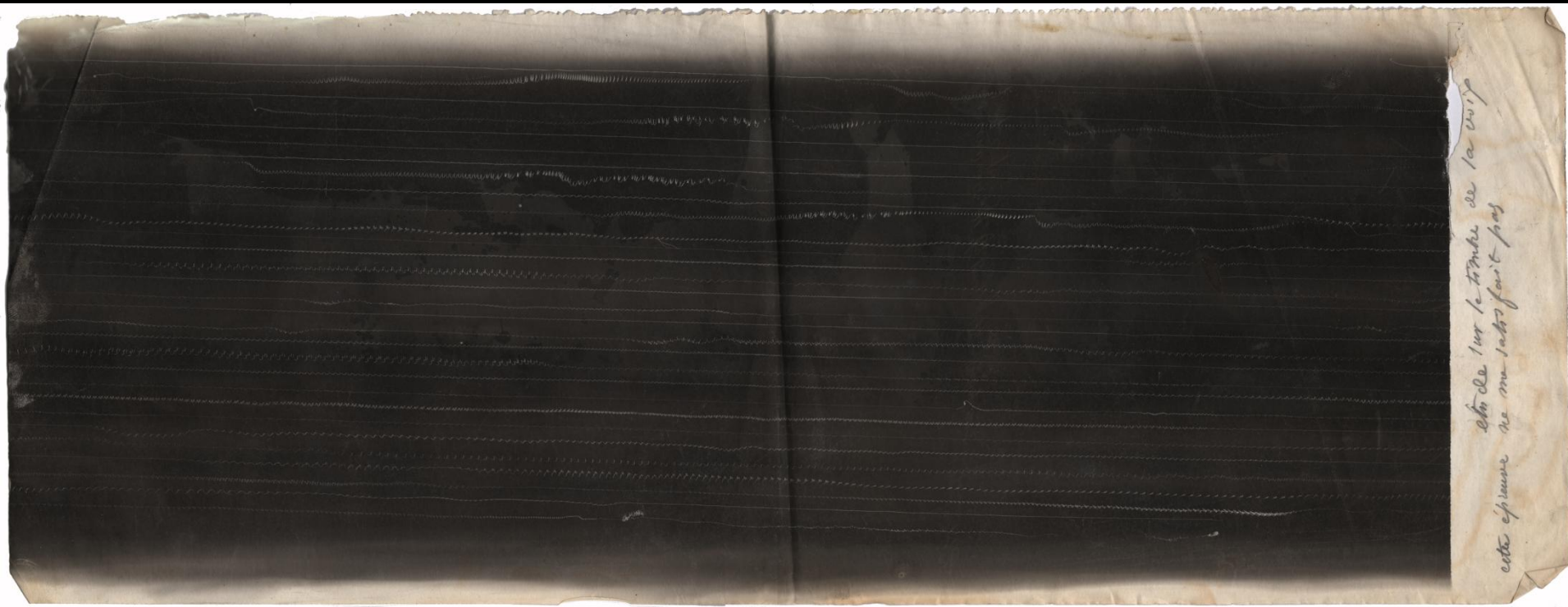
La voix a beaucoup d'intensité pour la distance de 80 centimètres. Dans les mots "pour lui", et "l'ouïe" devant fermant plusieurs, le style est affilé et a qu'elle la coupe sensiblement la gorge.

Signé le 16 - 9/11 1857
H. J.



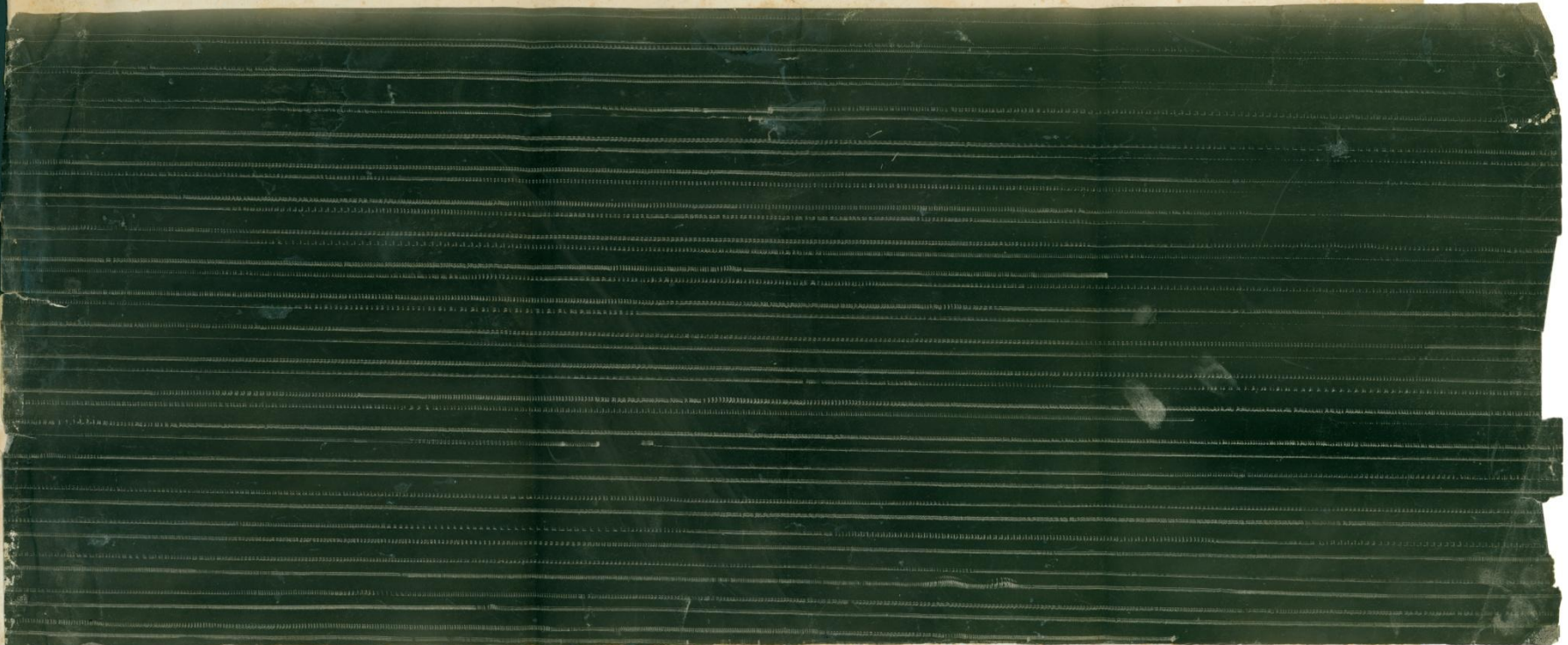
S'il faut qu'à ce rival Hédelmone infidèle
Ait remis ce bandeau! Dans leur rage cruelle
Nos lions du désert, sous leur antre brûlant....

November 1857



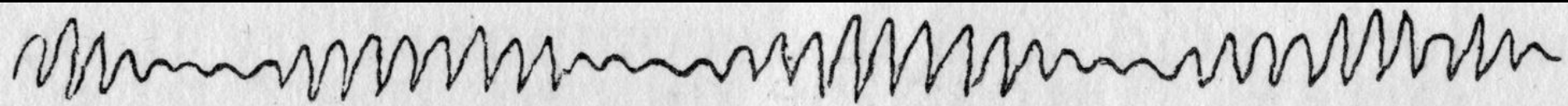
de la timbre de la voix
cette épreuve ne me satisfait pas

Study of the Timbre of the Voice ca. November-December 1857

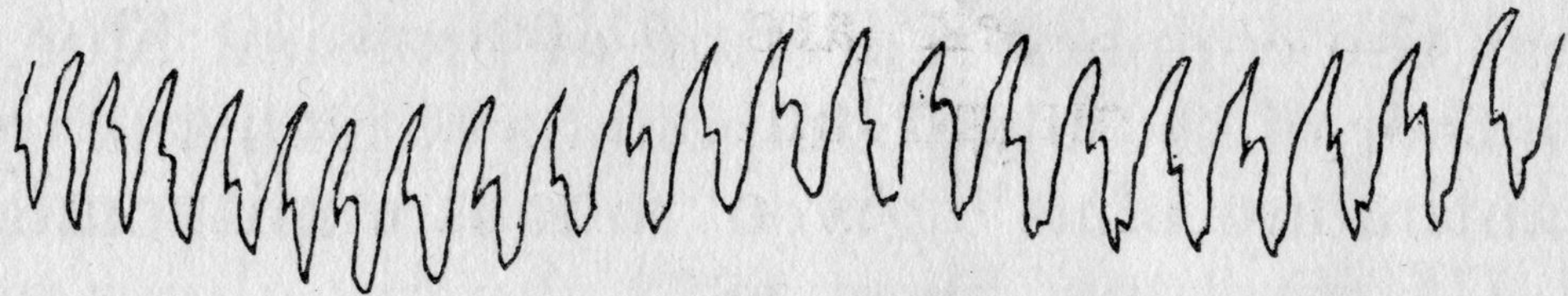


~~Chant~~ Chant de la voix - changements de son - membrane de boeuf - de
perpendiculaire à vitesse à la main
Goulet 1857

Song of the Voice, July 1857



tongue trill (*rrrrrrrr*)



trombone



“oo” in “mood”

1874

Dict of vocal Jan 28th 75 -
vowel ah = j sung to G

ahB

1875



This is a part of the sentences, “How do you do?” and “How do you like the phonograph?”

accurately set to the proper depth in the middle of one of the grooves. A sheet of stout tinfoil is tightly fastened round the cylinder, and the mouth-piece adjusted so that the point on the diaphragm lightly presses against the tinfoil over a groove.

Speaking into the mouth-piece in a distinct and deliberate voice, and at the same time turning the cylinder by clockwork or by hand, the sonorous vibrations communicated to the disc record themselves on the foil in the shape of minute indentations, which, examined by the naked eye, have the appearance given in Fig. 1. When the

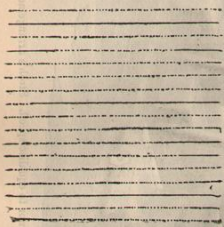


Fig. 1. Appearance presented by embossed foil of Phonograph.

sentence has been spoken, the disc and style are drawn aside, the cylinder turned back to its starting-point, and the disc and style again placed in the position they first occupied. Once more rotating the cylinder, the style rises and falls as the now embossed foil passes beneath it, and the motion given to the style is communicated to the disc, and thence to the air around. The air is thus thrown into a state of vibration similar to that to which the words originally gave rise. The articulation, though distinct, is not so loud as the original sounds, though, when strengthened by a trumpet placed over the mouth-piece, quite loud enough to be heard by a large room full of people. The vowels come out the clearest; such words as Canada, tapioca, are remarkably distinct. But it is by no means limited to such simple words; it can introduce itself with unmistakable distinctness by saying, "The phonograph presents its compliments to you all." Perhaps nothing is so distinct and ridiculous as its reproduction of laughter. Nor is it confined to speech; it reproduces a song, and even a duet, with considerable fidelity. Here comes in the advantage of using a clockwork means of rotation, to which we shall refer in the sequel.

Owing to the high speed of rotation of the cylinder, about one foot per second, a single spoken word produces a multitude of fine markings, which occupy a considerable length. Thus, the word *battle* is represented in the next diagram, Fig. 2,* in about its real size. The slight halt which occurs between the pronunciation of the two syllables in this word occasions a break in the markings, two and a half inches in length. The phonograph cylinder, rotated at a given speed, will furnish, in fact, a very delicate and accurate instrument for recording the time interval between two sounds, or the vibration-period of any articulate or musical sound; and for these purposes it will probably be of great use in acoustic measurements.

When the indentations on the tinfoil are carefully examined through a magnifying glass, characteristic differences are observed. Through the obliging kindness of the London Stereoscopic Company, which firm has purchased the patent rights of the phonograph for this country, the writer has had the opportunity of making a series of experiments with a very perfect instrument, and has submitted the various tracings to microscopic examination and measurement. The following diagram, Fig. 3, represents the appearance

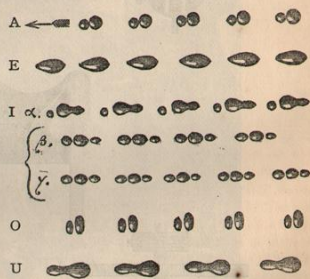
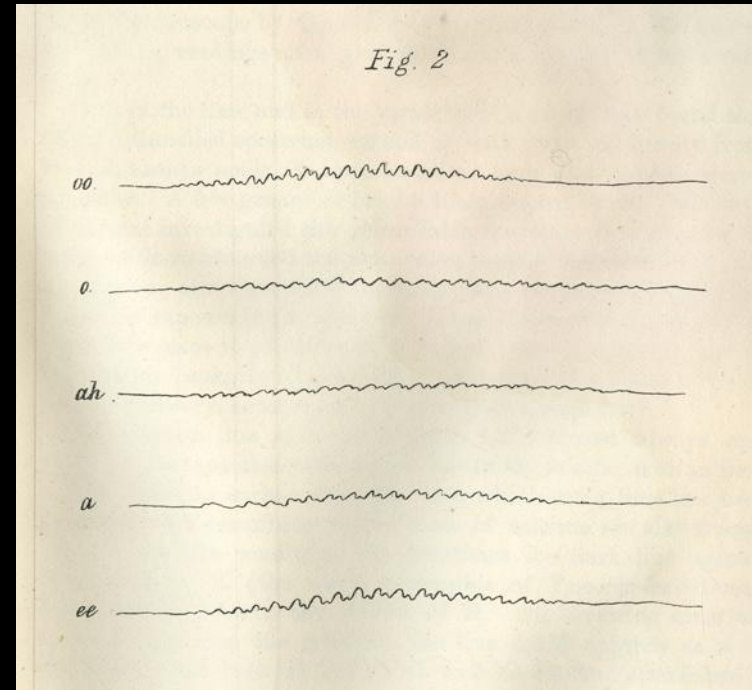
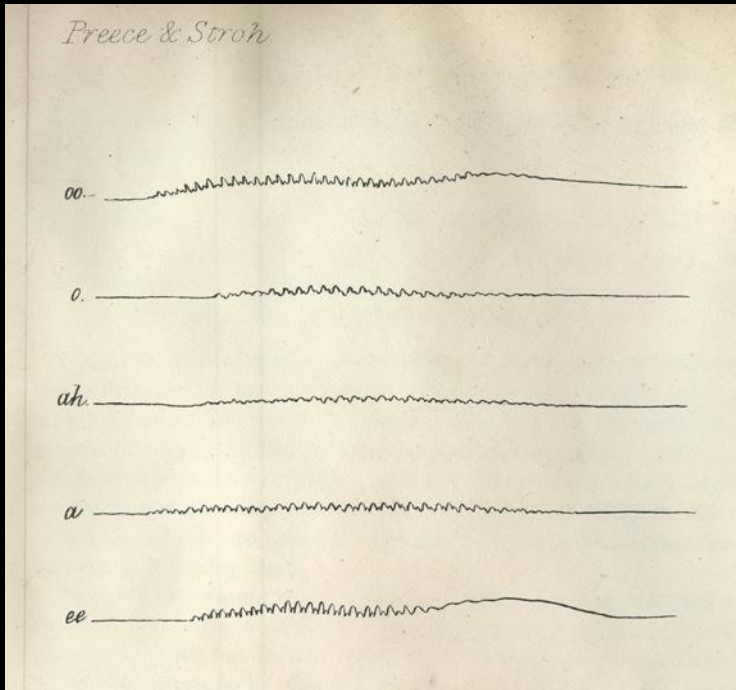


Fig. 3. Magnified view of the Tracings of the Vowel Sounds produced by Phonograph.

presented by the vowel sounds (English pronunciation) under a low magnifying power;

* As a substitute for the ordinary centre "rule," or line, in this page is given Fig. 2, the phonograph tracing of the word "battle" distinctly pronounced. The cylinder revolved at a surface speed of about one foot per second, actual length of the tracing $6\frac{1}{2}$ inches. The portion above the "space $\frac{3}{4}$ inches," represents the syllable "bat," that below it, "le." It may be interesting for our readers to compare the phonographic tracing given here with the logographic tracing of the same word at p. 492.

Henry Preece and Augustus Stroh



Figs. 4, 5, and 6 show the waves given by the sound "oh," spoken at

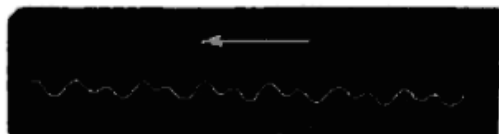


Fig. 5.



Fig. 6.

various pitches by the same voice (that of Dr Crum Brown). Figs.

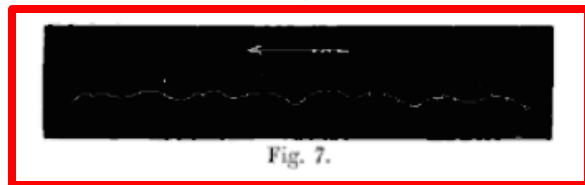


Fig. 7.



Fig. 8.

7 and 8 are given by the sound *a* in "father," the first on *c* by Sir R. Christison, the second on *c'* by Professor Jenkin.

Sound of *a* in
"father" sung on *c* by
Sir Robert Christison
(1797-1882),
published 1878

stische Feder gestützt, eine horizontale Stellung einnimmt, ist befestigt 1) eine Stimmgabel *St*, deren eine Zinke mit einer schreibenden Spitze versehen ist; 2) die trommelfellartig gespannte Membran *m* mit dem Schalltrichter *S*, in den man hineinsingt oder spricht. Auf der Mitte der Membran ist der Schreibstift *a* befestigt, der einen zweiarmigen, um den Punkt *n* sich drehenden Hebel vorstellt. Der Theil 2 des Apparats ist so angebracht, dass er senkrecht zur Ebene des Papiers

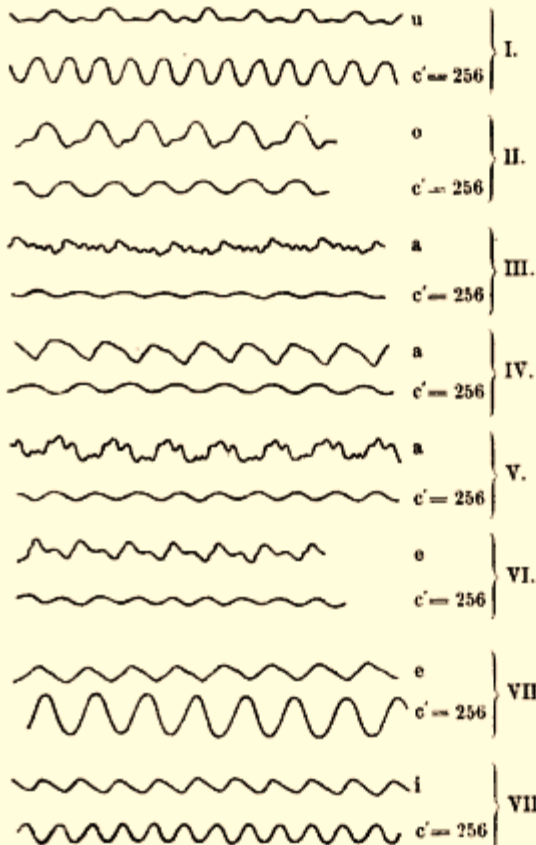


Fig. 64. Die Curven von I. bis VIII. sind vermittelt des Hensen'schen Phonautographen gewonnen.

Hierdurch und durch ihre Form wird die Membran in hohem Masse in ihren Eigenschwingungen gehemmt (gedämpft), sie giebt deshalb die Erschütterungen der Luft auf das Genaueste wieder. Der Schreibstift *a* zeichnet mit minimaler Reibung dicht neben der Stimmgabel auf eine berusste Glasplatte *g*, die auf dem Brette *Br* befestigt ist

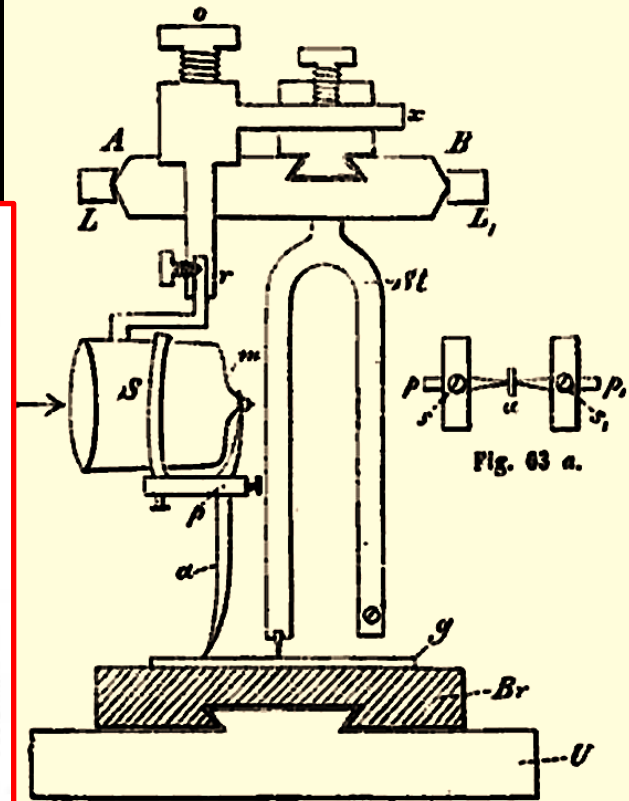
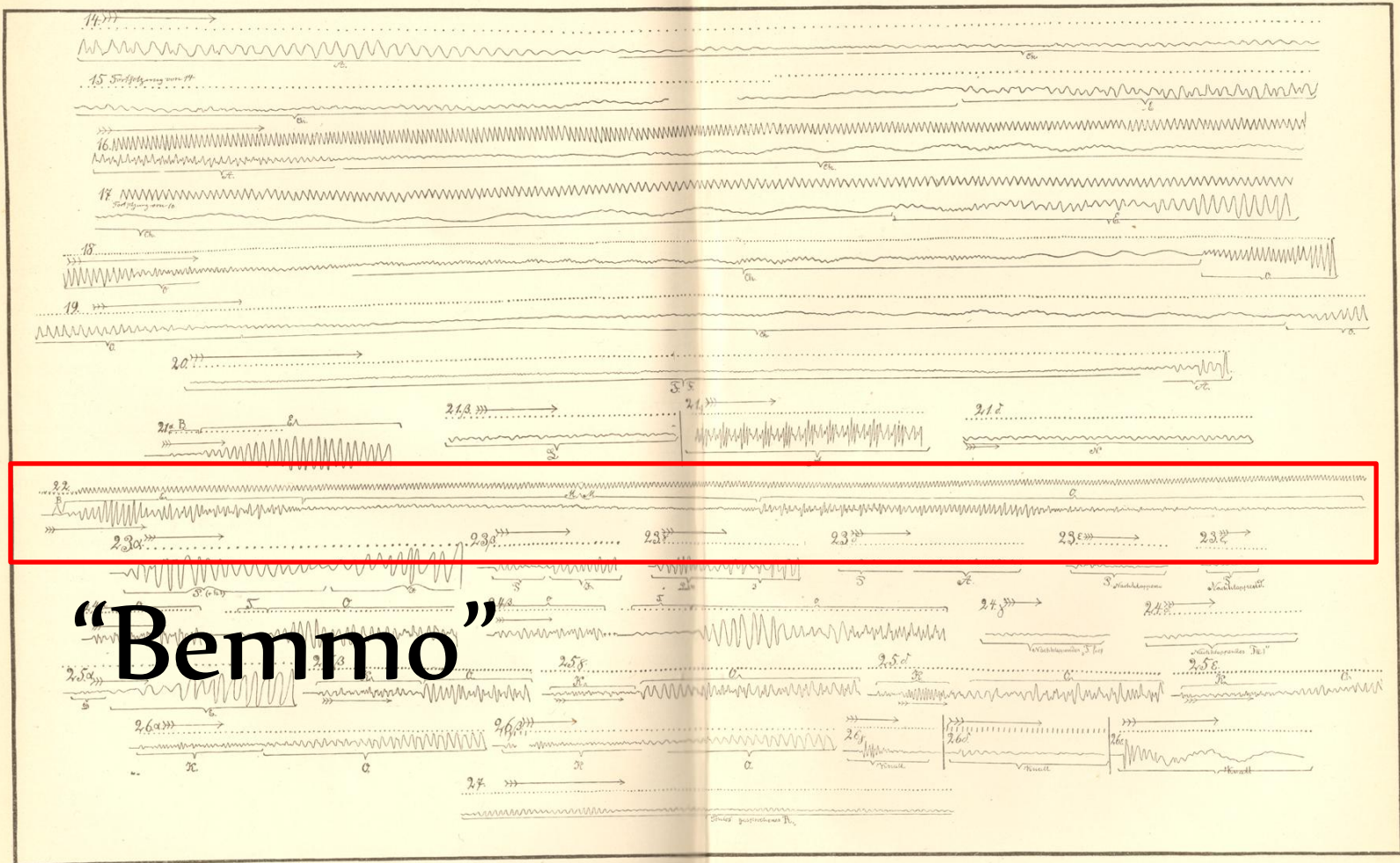


Fig. 63. Hensen's Phonograph.

Victor Hensen's Phonautograph or Sprachzeichner

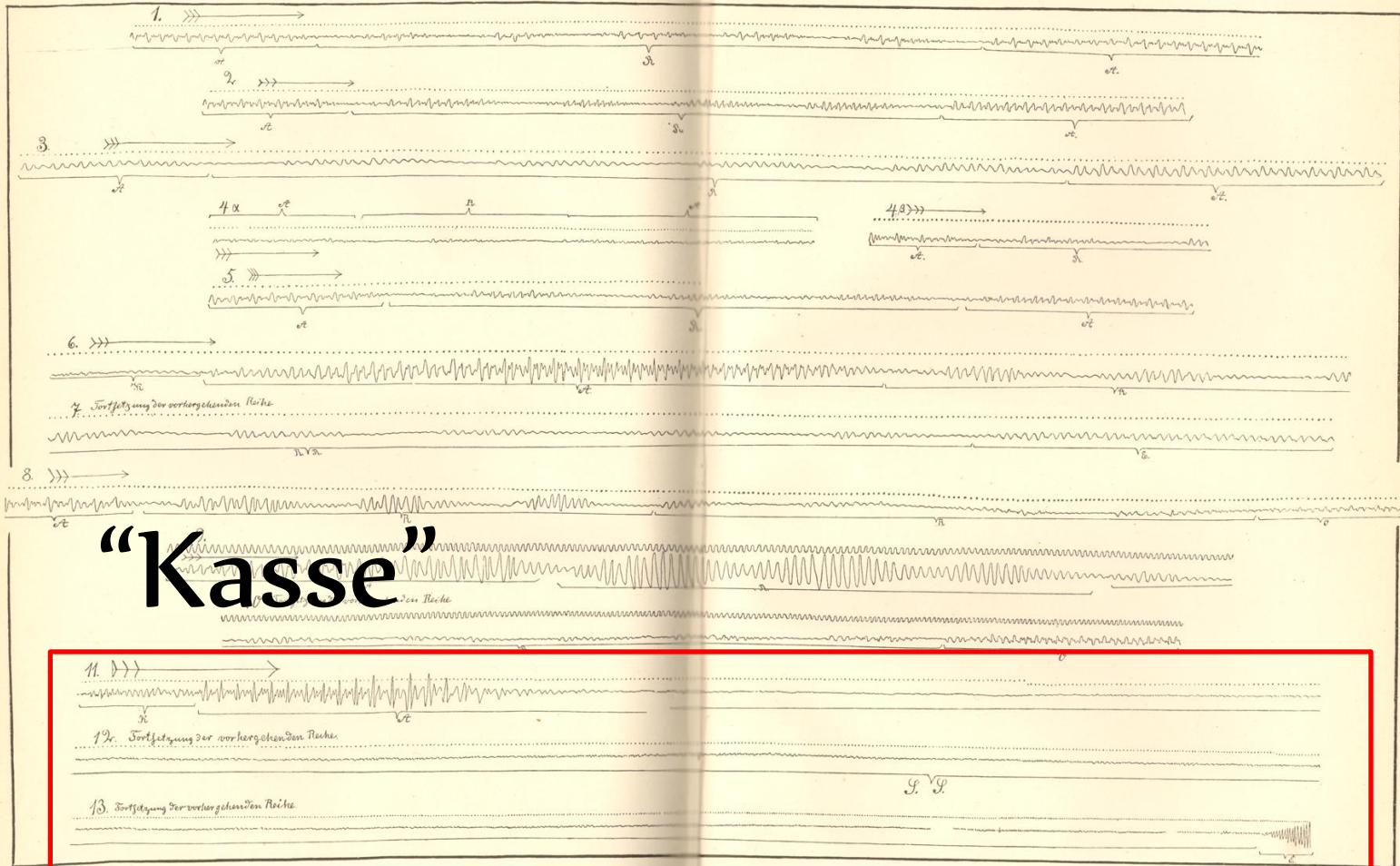
1879

1886/87

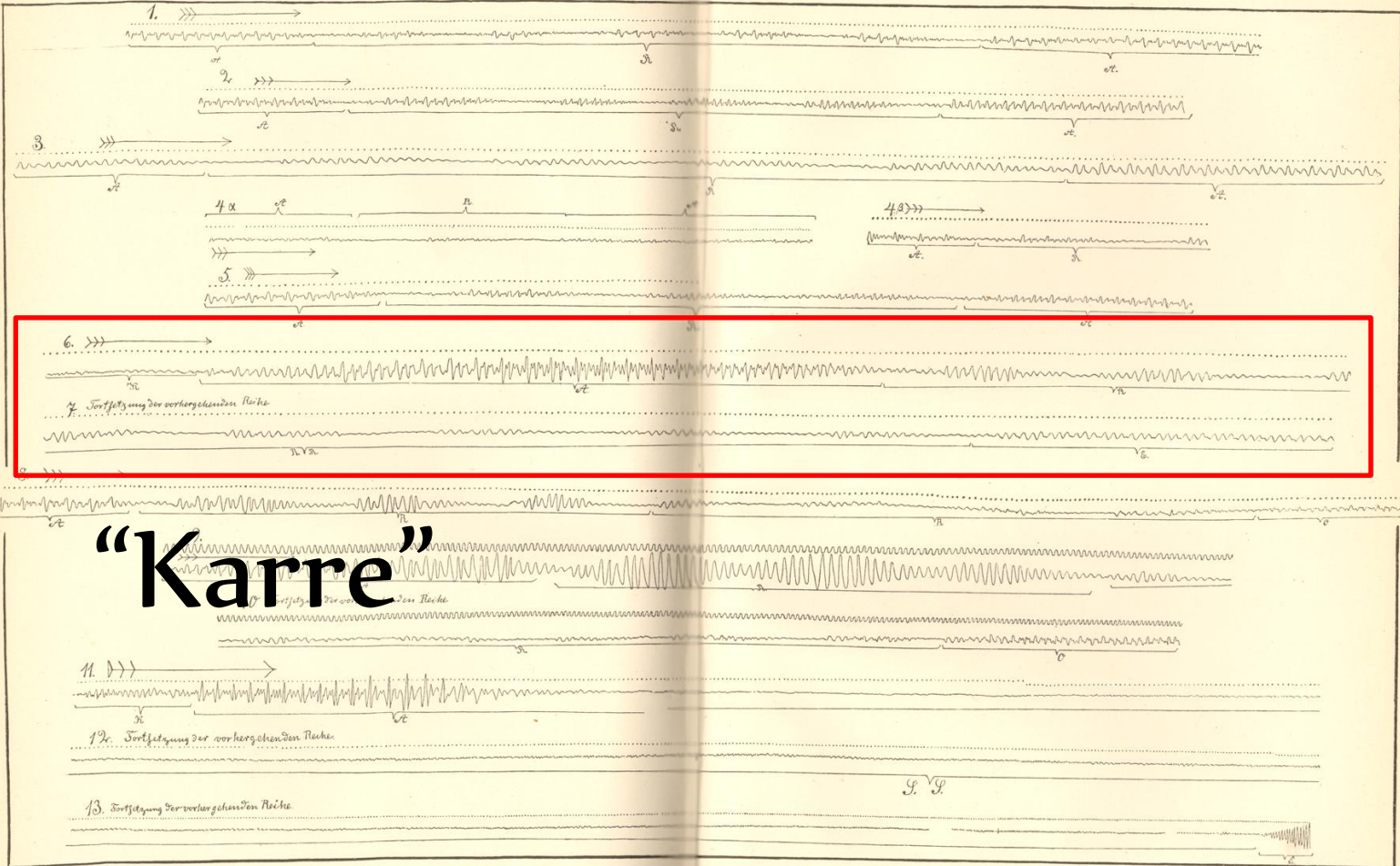


Paul Wendeler

1886/87



Paul Wendeler

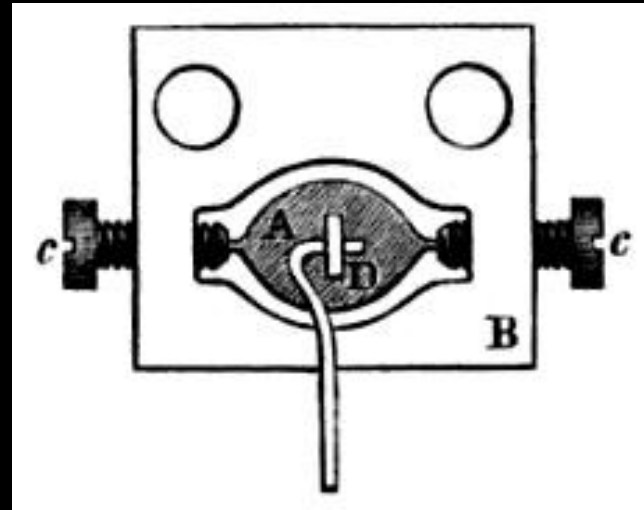
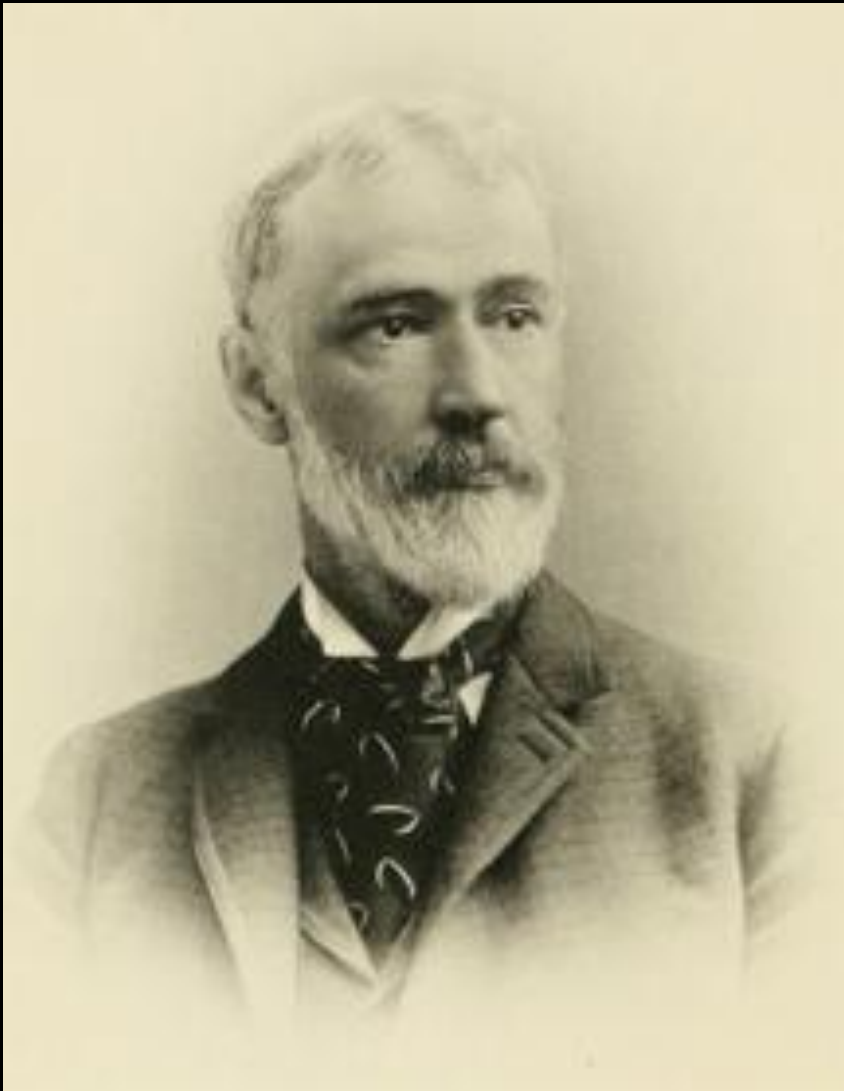


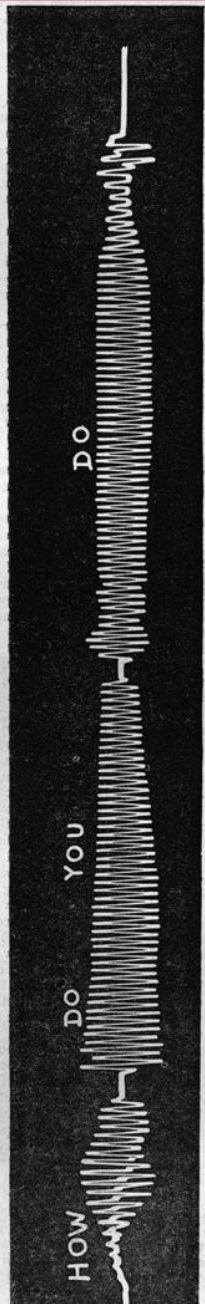
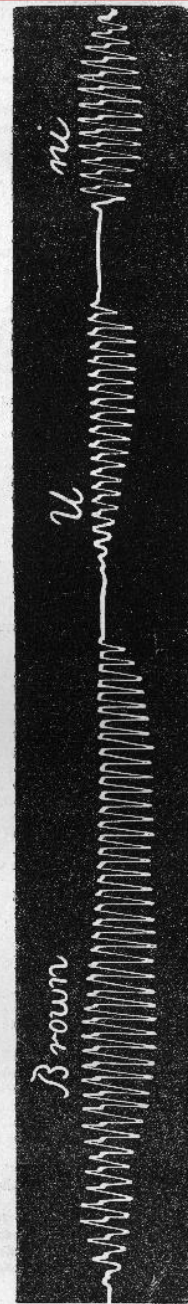
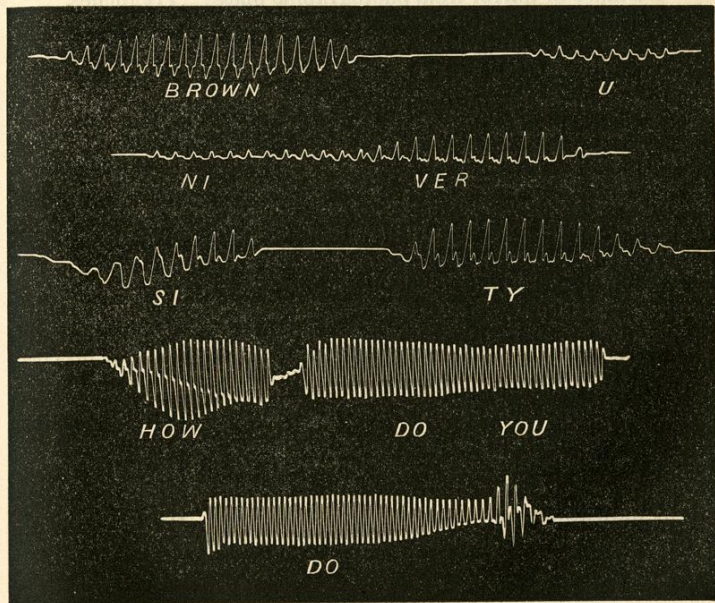
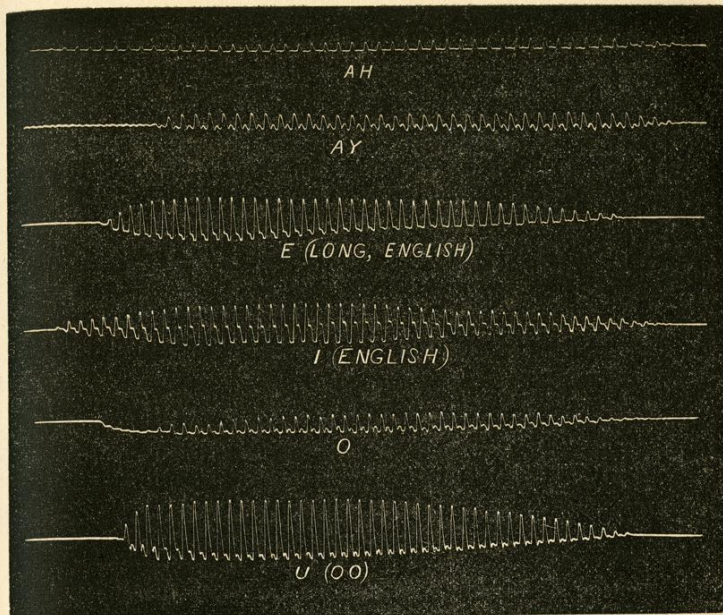
“Karre”

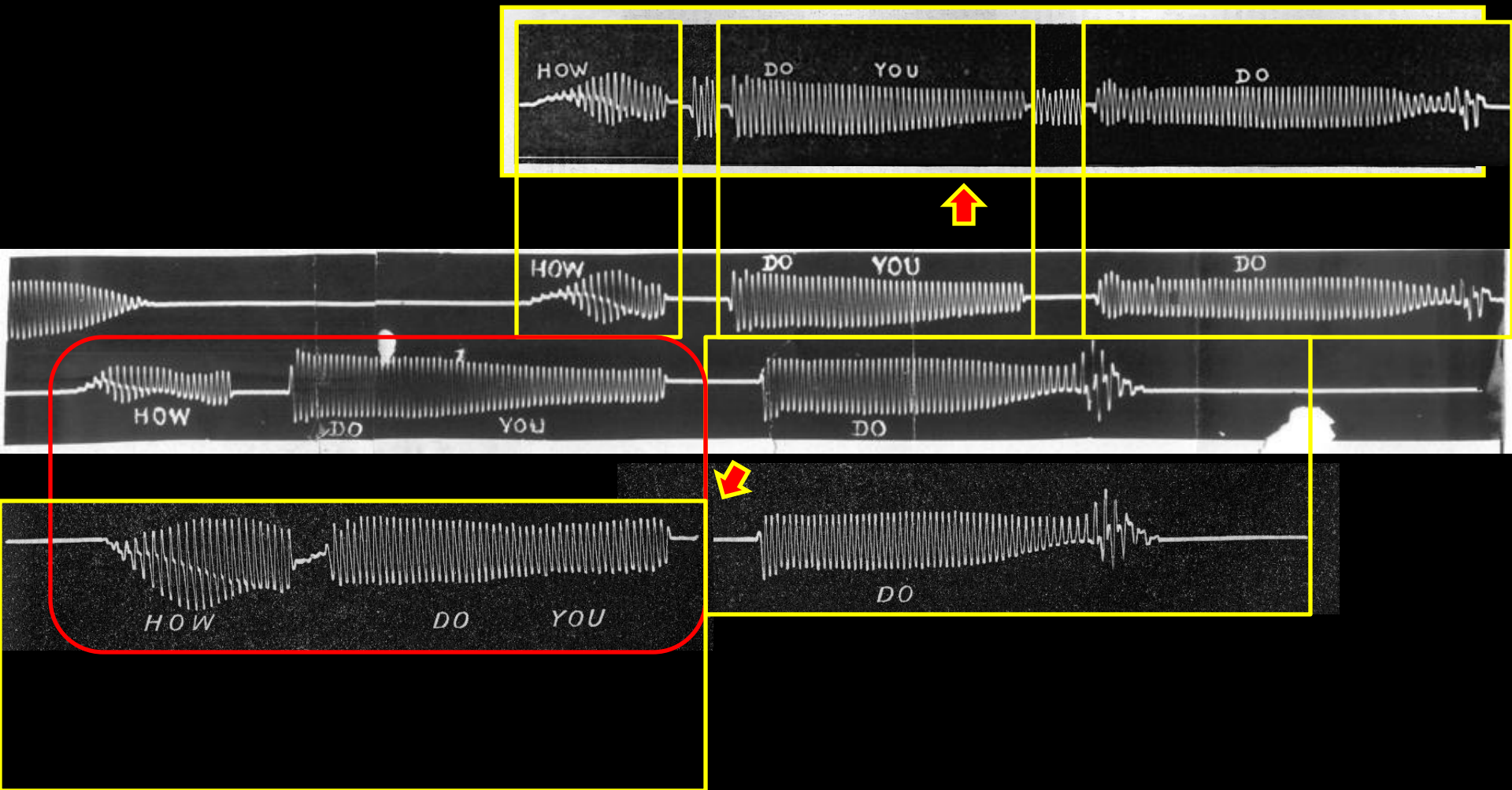
Eli Whitney

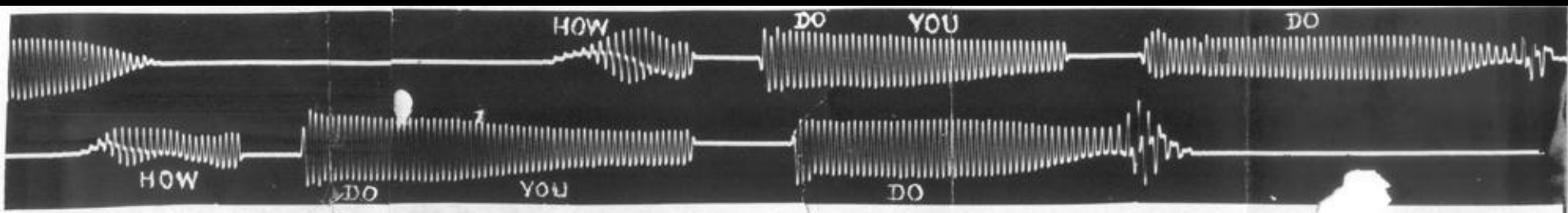
Blake, Jr.

1878









Dayton Miller's phonodeik

1908

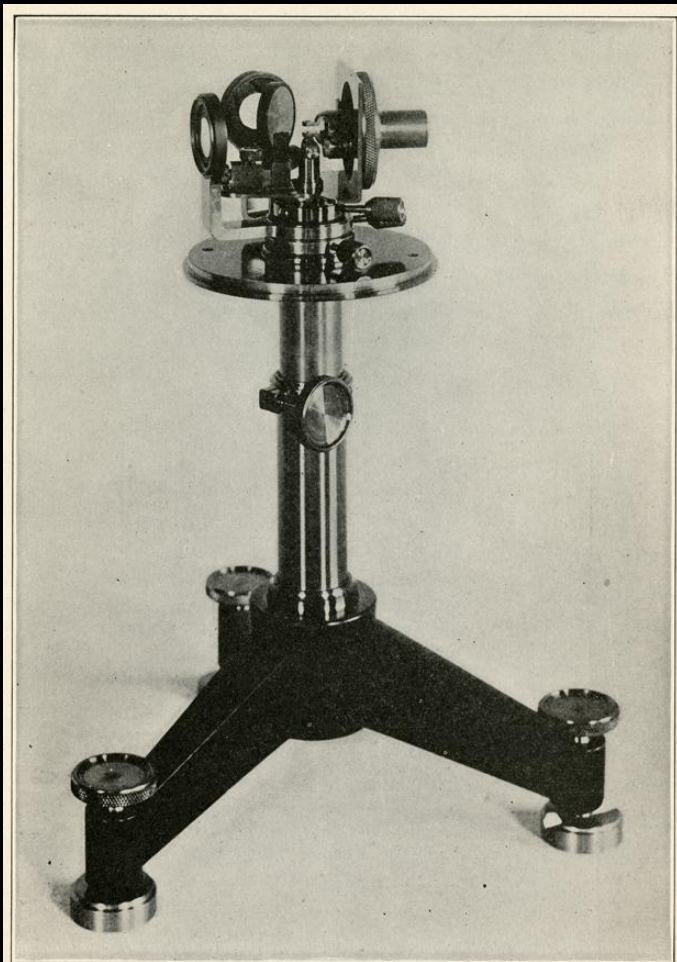


FIG. 67. The phonodeik used for photographing sounds.

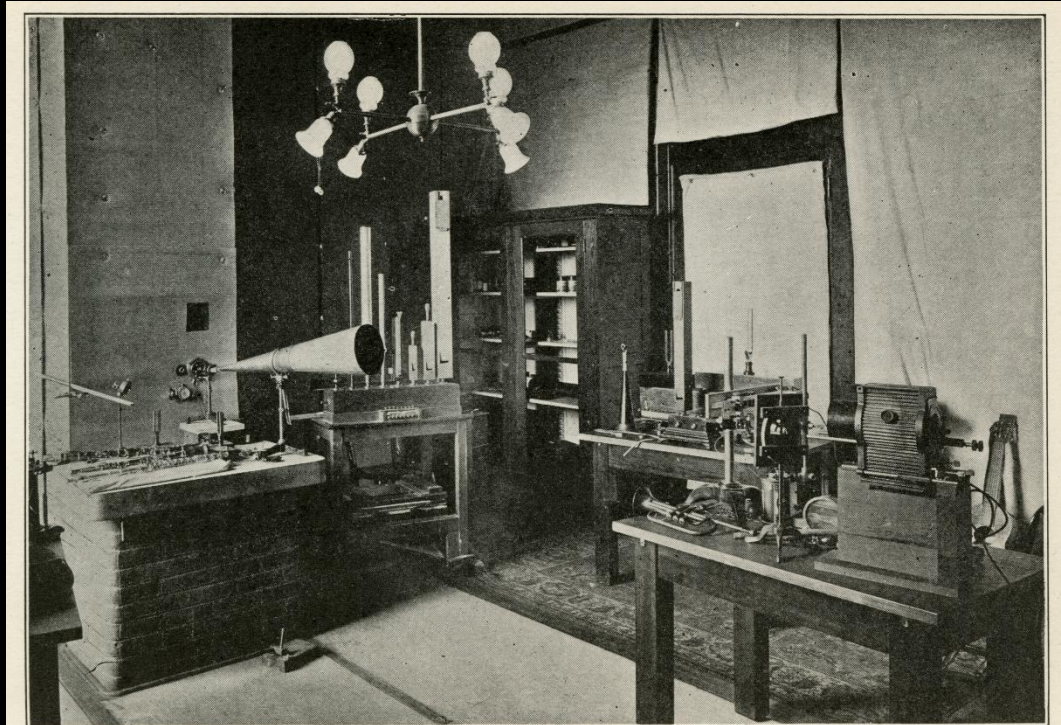


FIG. 68. A laboratory equipped for photographing sound waves.

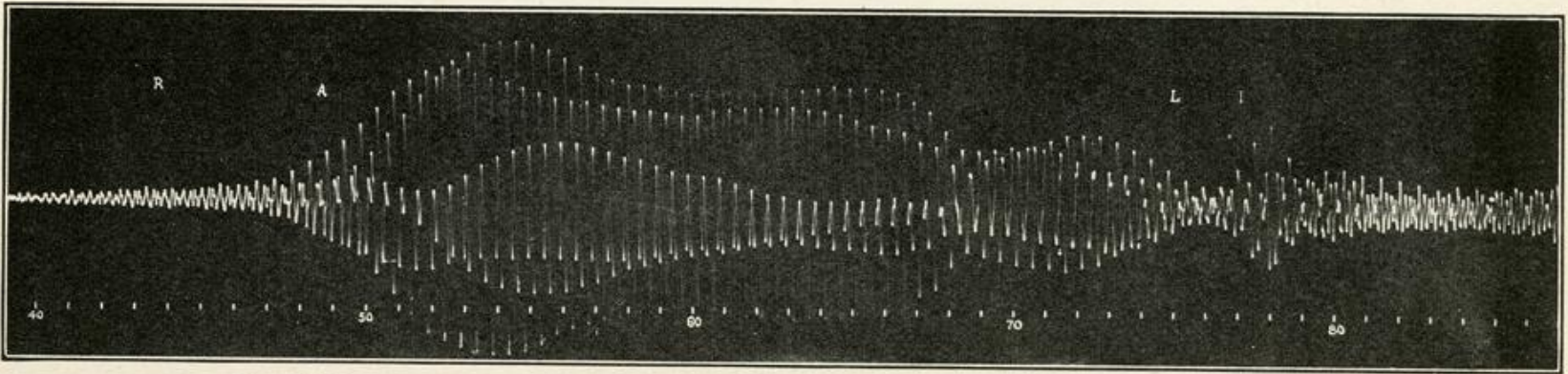
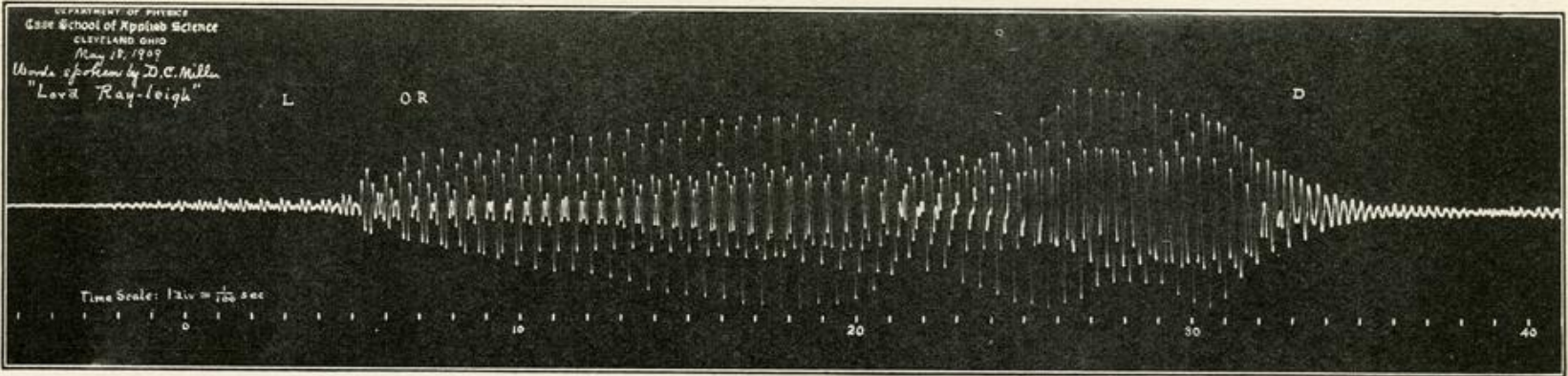
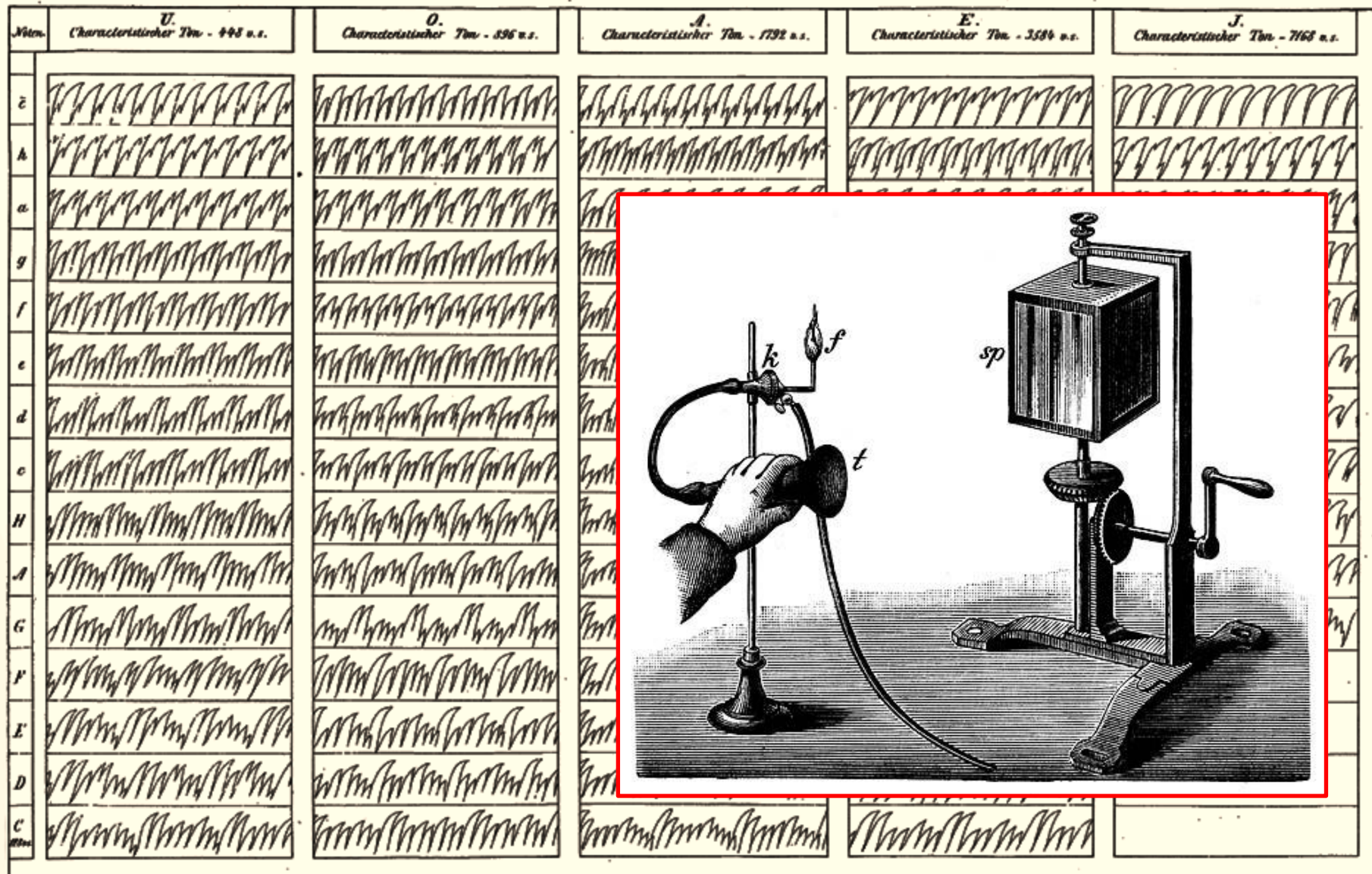
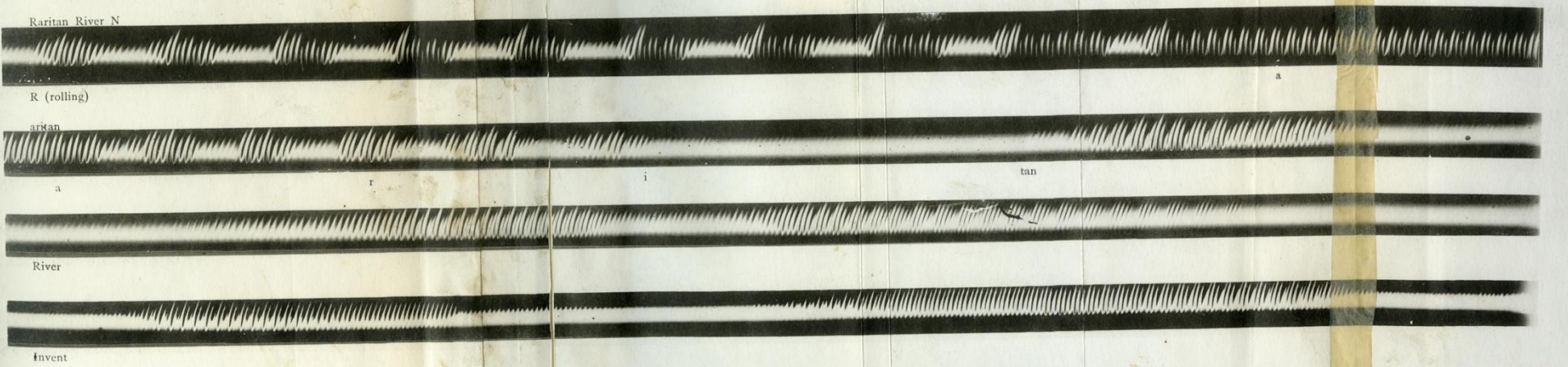
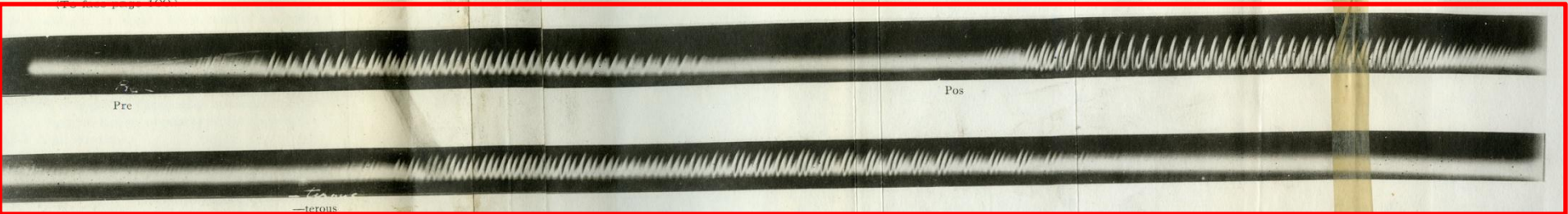


FIG. 172. Photograph of the words "Lord Rayleigh" as spoken by a baritone voice.

18 May 1909

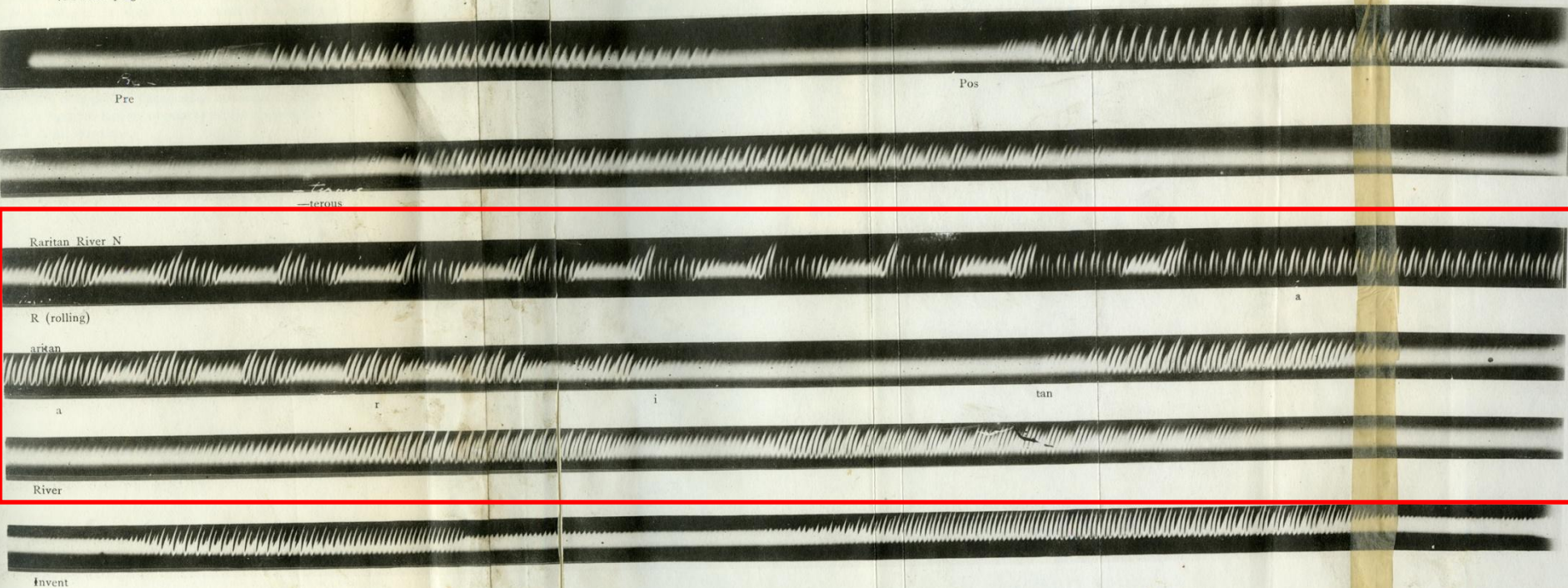
Flammenbilder der Vocale U. O. A. E. J gesungen auf die Noten der zwei Octaven von C' bis c'-
 (Natürliche Größe der Flammen zwischen 3 und 4 Centimeter.)





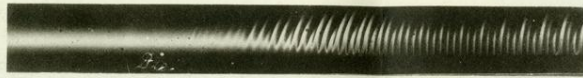
NICHOLS AND MERRITT. PHOTOGRAPHY OF MANOMETRIC FLAMES.

preposterous

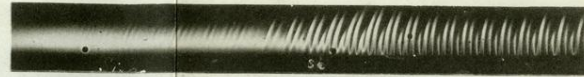


NICHOLS AND MERRITT. PHOTOGRAPHY OF MANOMETRIC FLAMES.

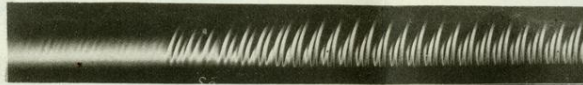
Raritan River



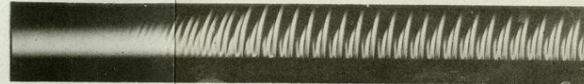
Die



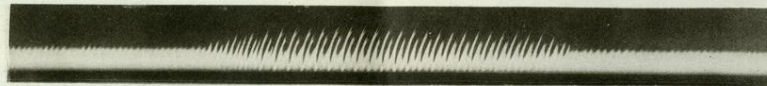
Sigh



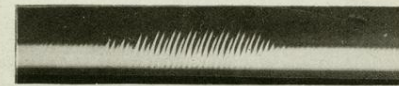
Say



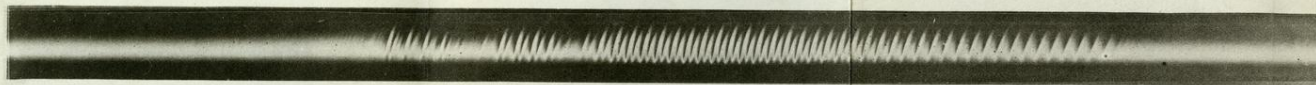
Spray



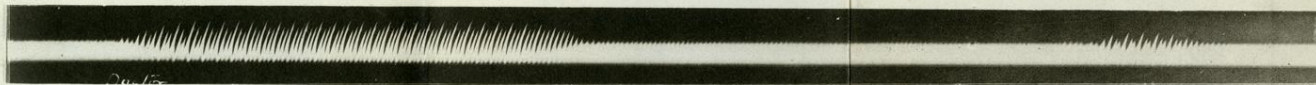
In



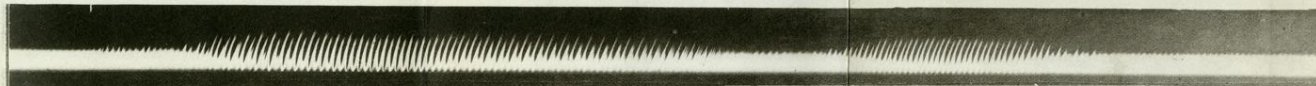
To



Three



Doctor



Koenig

Doctor Koenig

*Zufolge
a. b. c. op.*

E. BERLINER'S
GRAMMOPHON
D. R. - P. 45048.

No. 201

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Dec. 14. 1889

R 50

Schalldruck
in Kupferdruck
manier von
Grammophon =
Zink-Platte.
1889



Also hier ist eine Platte die Herr Louis Rosenthal mit nach Frankfurt nehmen wird. Er will dieselbe vervielfältigen. Vielleicht braucht er verschiedene Prozesse um das zu tun. Ein Prozess ist zum Beispiel, von der Platte einen Abdruck auf Falschpapier zu machen und dann über Falschpapierkopie eine, eine Photogravüre auf Zink oder andere Metalle auszuführen. Also heute ist der, äh, 11. November 1889, und ich bin hier auf der Andreaestraße Nummer 2A, eine Treppe hoch, in Hannover.

So here's a plate which Mr. Louis Rosenthal will take with him to Frankfurt. He wants to duplicate it. Maybe he'll need to use different processes to do that. One process is for example to make a print of the plate on tracing paper and then via tracing-paper copy to carry out a, a photogravure on zinc or other metals. So today is the, uh, 11th of November 1889, and I'm here on Andreae Street, number 2A, one flight up, in Hanover.

ZON-O-PHONE IMPROVED GRAMOPHONE

Record Made and Signed by Hon. CHAUNCEY M. DEPEW.



Two-Thirds
Actual Size.

Indestructible
Records.

Place in the Zon-o-phon (improved Gramophone), and this is what you hear spoken as plainly and as true to life as if you sat at table with Mr. Depew himself:

FROM A SPEECH BY HON. CHAUNCEY M. DEPEW ON FOREFATHERS' DAY.

"My ancestors having arrived in this country among the early settlers, on the one side in New York, on the other side in New England, and having fallen in love and married in the old-fashioned way, without regard to race or creed, I can claim membership of and attend all the national celebrations. First come the Scotch, whose dinner is made digestible by the bagpipes and indigestible by haggis, and whose glory in literature and philosophy none can dispute. The Scotchman keeps the Sabbath and everything else he can lay his hands on. Next come my own Dutch Knickerbocker brethren, who believed that Holland kept alive the spark of civil and religious liberty and are happy in the wisdom of their far sighted ancestors who pre-empted all the land on Manhattan Island. Then the sons of St. Patrick revel in wit and eloquence while the Welshmen display the intellect of Gladstone and the obstinacy of an army mule. But for real, honest, double-breasted claiming of all that there is in this country, and much that there is in the world of which the nineteenth century can boast and the twentieth century hope for, the Yankee takes the palm," etc., etc.

Hundreds of other indestructible records, including those of America's foremost public speakers, actors and musicians.

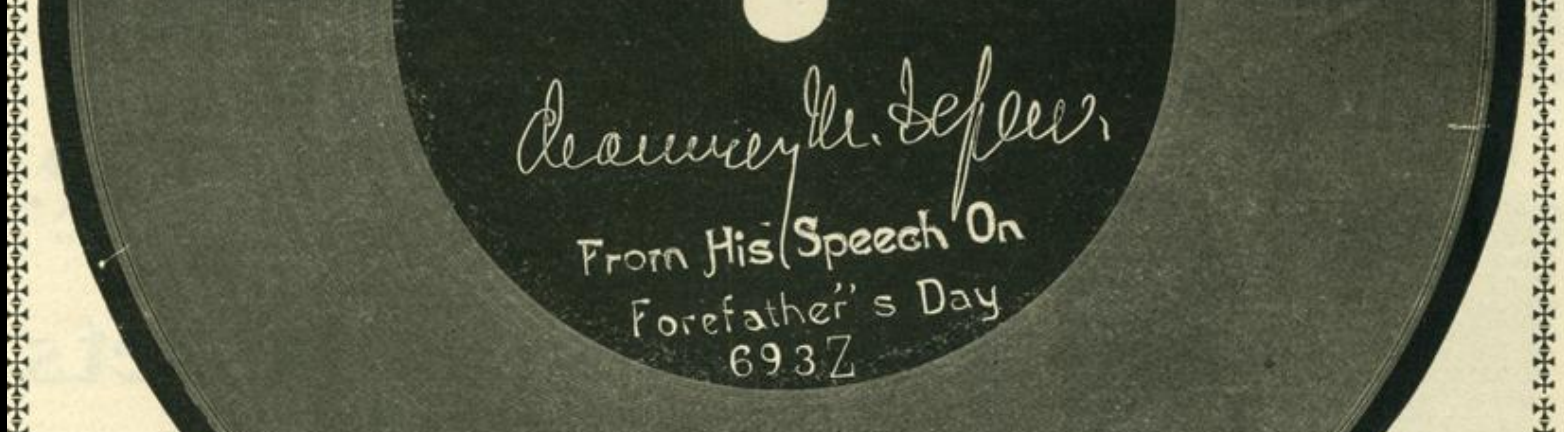
One Thousand dollars in gold will be paid for any record sold by us that was not made by the person or persons to whom it is accredited. All recent records signed by the maker.

ZON-O-PHONE (improved GRAMOPHONE), complete, \$25.00. Records, 50 cents each.

By Special Arrangement actual subscribers to THE COSMOPOLITAN who would like to place in their homes AT ONCE, what is without question the most wonderful, most natural, and altogether most satisfactory Talking Machine ever invented, the ZON-O-PHONE (Improved Gramophone) can do so until May 1, and pay for it on the installment plan.

For further information, printed matter, record catalogues, etc., apply to

NATIONAL GRAMOPHONE CO., 874 Broadway, New York.



Chauncey M. Depew
From His Speech On
Forefather's Day
693Z

Place in the Zon-o-phone (improved Gramophone), and this is what you hear spoken as plainly and as true to life as if you sat at table with Mr. Depew himself :

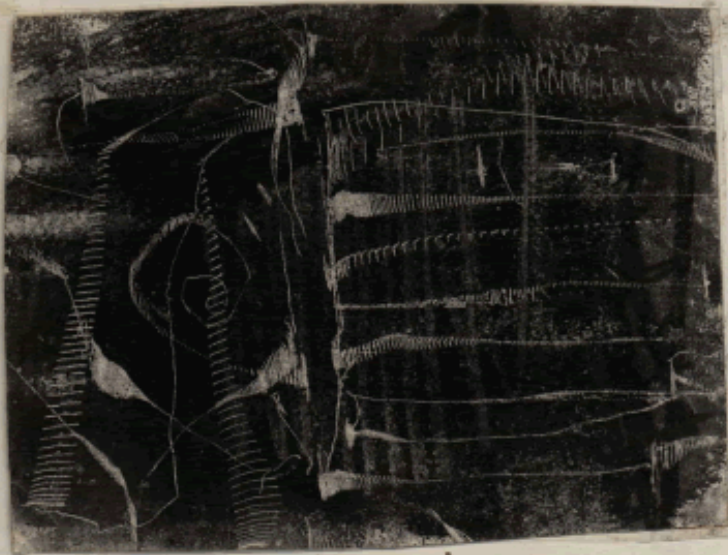
FROM A SPEECH BY HON. CHAUNCEY M. DEPEW ON FOREFATHERS' DAY.

“ My ancestors having arrived in this country among the early settlers, on the one side in New York, on the other side in New England, and having fallen in love and married in the old fashioned way, without regard to race or creed, I can claim membership of and attend all the national celebrations. First come the Scotch, whose dinner is made digestible by the bagpipes and indigestible by haggis, and whose glory in literature and philosophy none can dispute. The Scotchman keeps the Sabbath and everything else he can lay his hands on. Next come my own Dutch Knickerbocker brethren, who believed that Holland kept alive the spark of civil and religious liberty and are happy in the wisdom of their far sighted ancestors who pre-empted all the land on Manhattan Island. Then the sons of St. Patrick revel in wit and eloquence while the Welshmen display the intellect of Gladstone and the obstinacy of an army mule. But for real, honest, double-breasted claiming of all that there is in this country, and much that there is in the world of which the nineteenth century can boast and the twentieth century hope for, the Yankee takes the palm,” etc., etc.

“My ancestors having arrived in this country among the early settlers, on the one side in New York, on the other side in New England, and having fallen in love and married in the old fashioned way, without regard to race or creed, I can claim membership of and attend all the national celebrations.”



(Dawle)



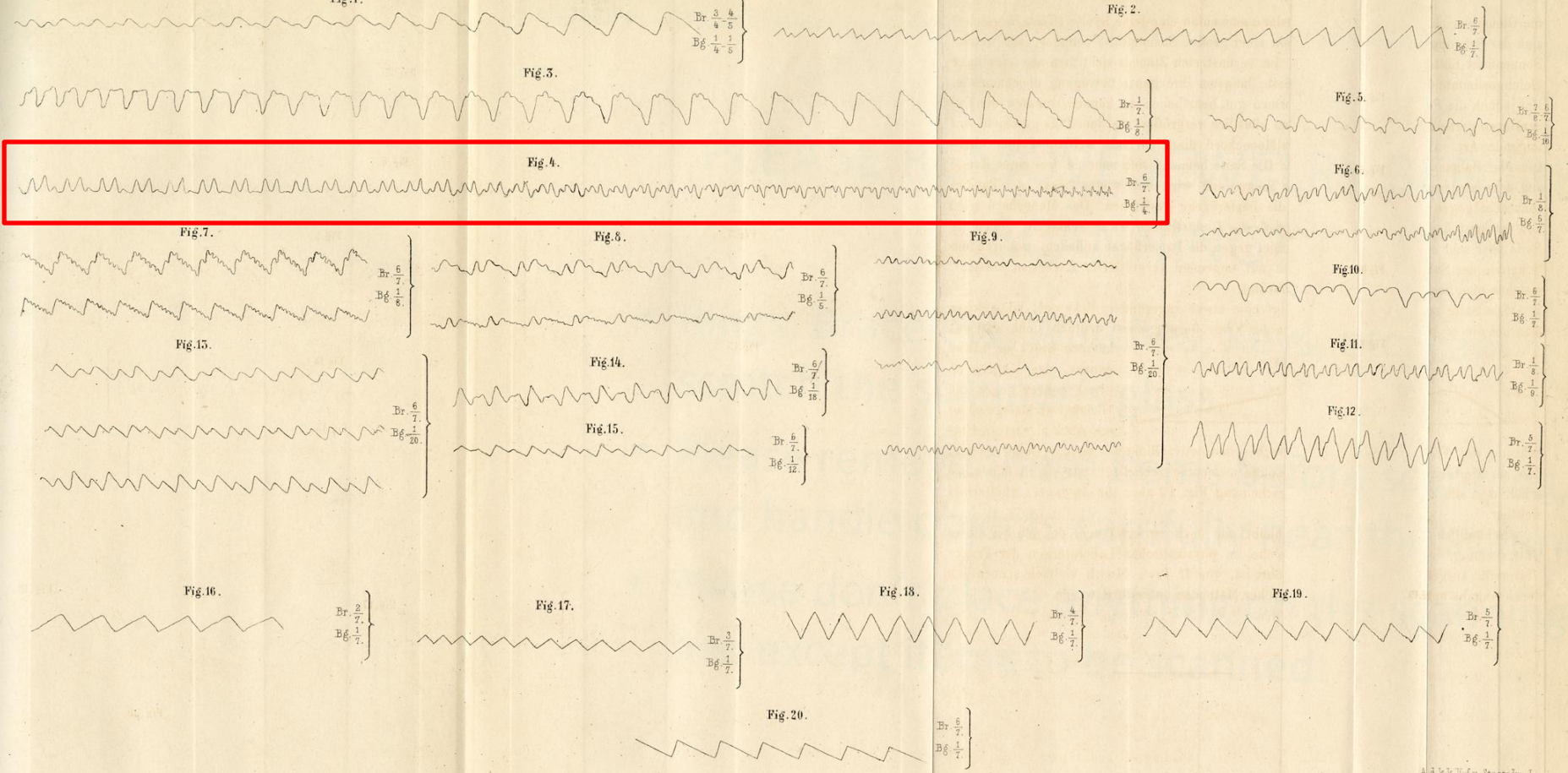
(Gustau)

Premiers essais de fixation du son
remontant à trois années
créantés sans aucun instrument.

L. S. J. B.



1853 or 1854



Clemens Neumann
1870

Claude-
Servais-
Matthias
Pouillet,
1850

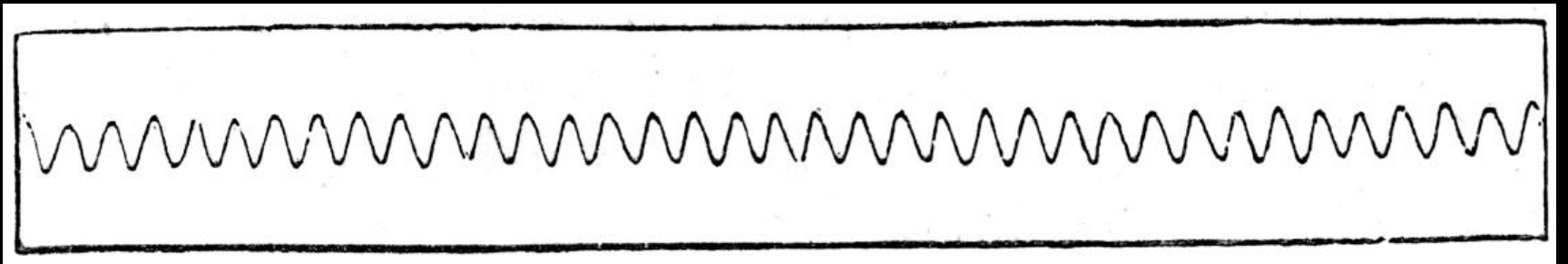
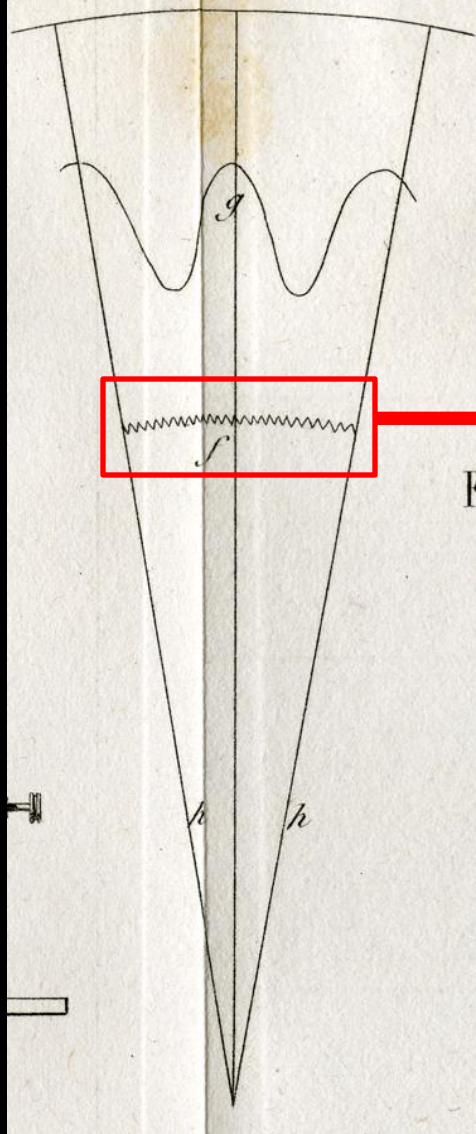
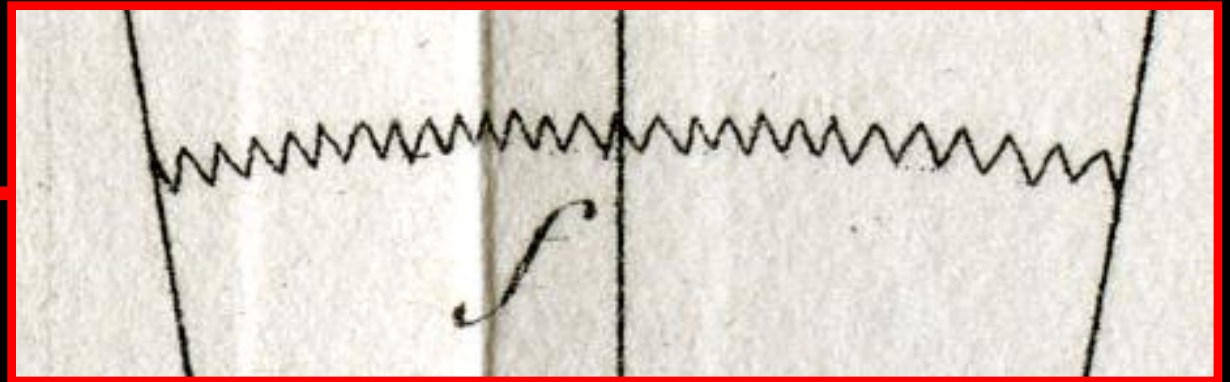


Fig. 3.



Guillaume Wertheim



1842 / 1844

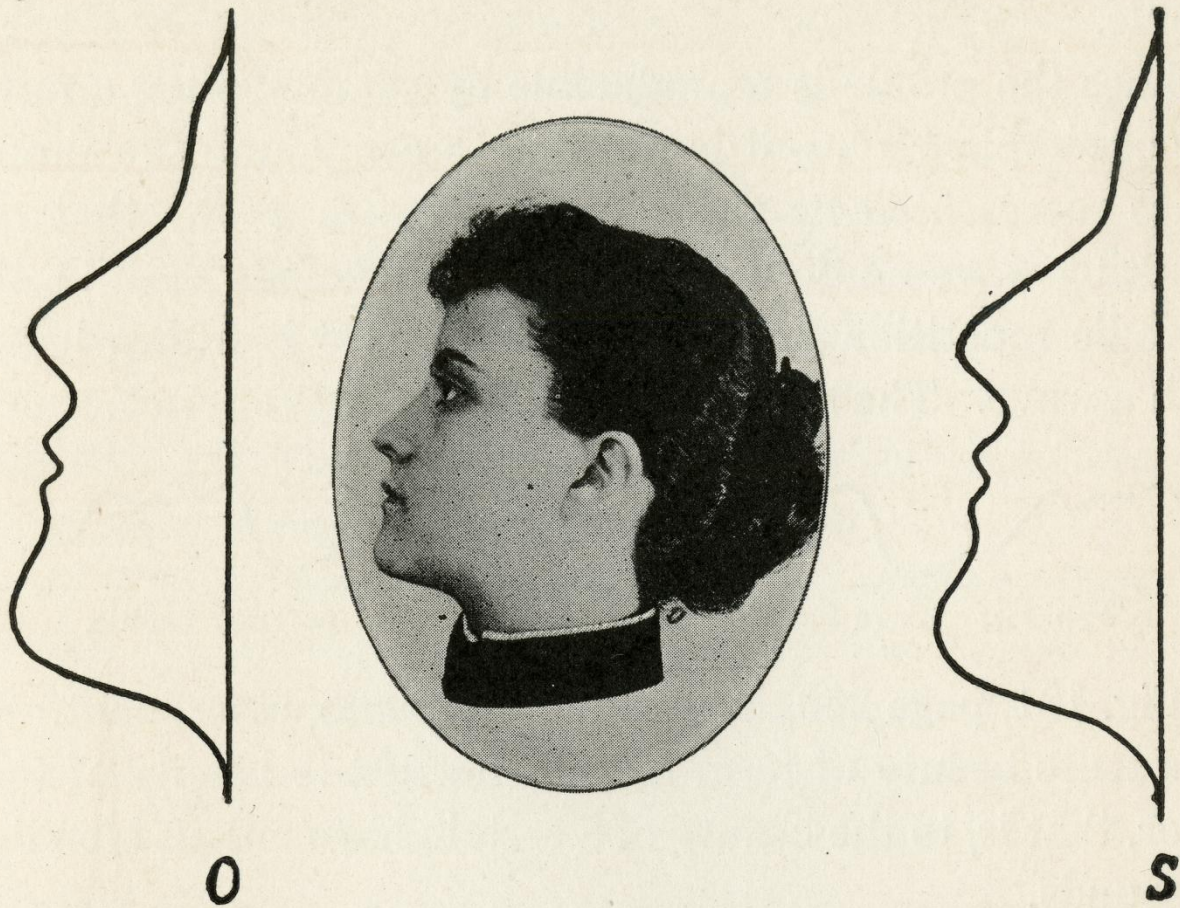
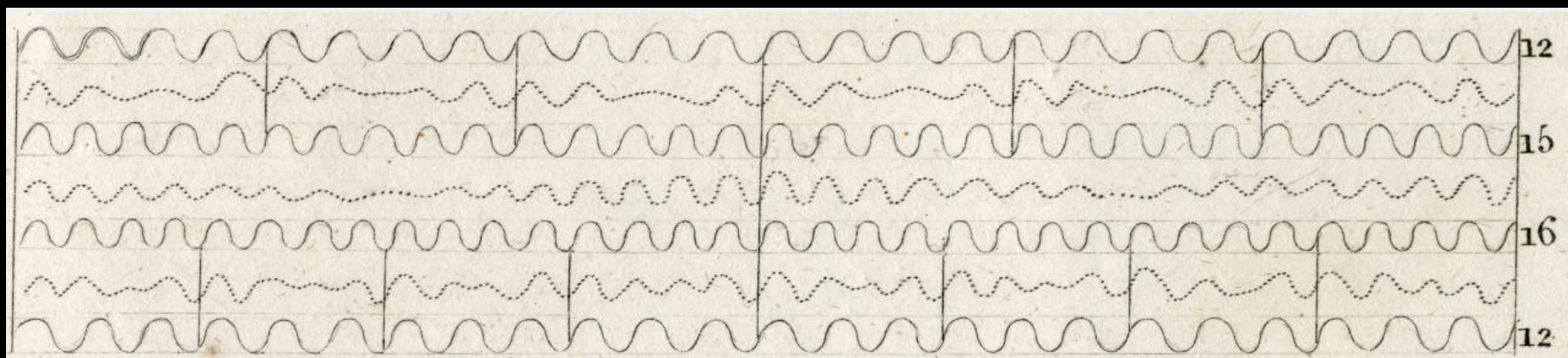


FIG. 94. Reproduction of a portrait profile by harmonic analysis and synthesis.



FIG. 95. Wave form obtained by repeating a portrait profile.



**Thomas Young,
1806**

Pub. by J. Johnson, London 1 July 1806.

1. fig. 1

2. fig. 2
1.

3. fig. 3
1.

4. fig. 4
1.

3. fig. 5
2.

4. fig. 6
3.

5. fig. 7
4.

5. fig. 8
3.

6. fig. 9
5.
4.

Leonhard Euler,
1739

16.
8
4
2
1

Octave.

3
2
Fifth.

4
3
Fourth.

5
4
Third sharp.

6
5
Third flat.

6 } 3 } 4 flat.
5 }
3 }

Sixth sharp.

8 }
5 } 3 } 2 flat.
4 }

Sixth flat.

Tab: ii

Octave.

Fifth.

Fourth.

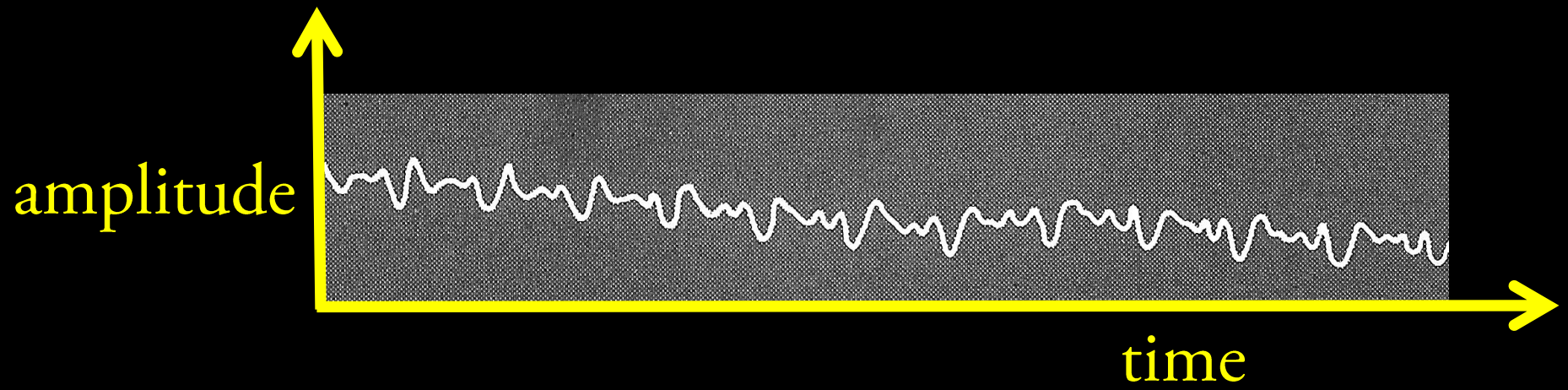
Third sharp.

Third flat.

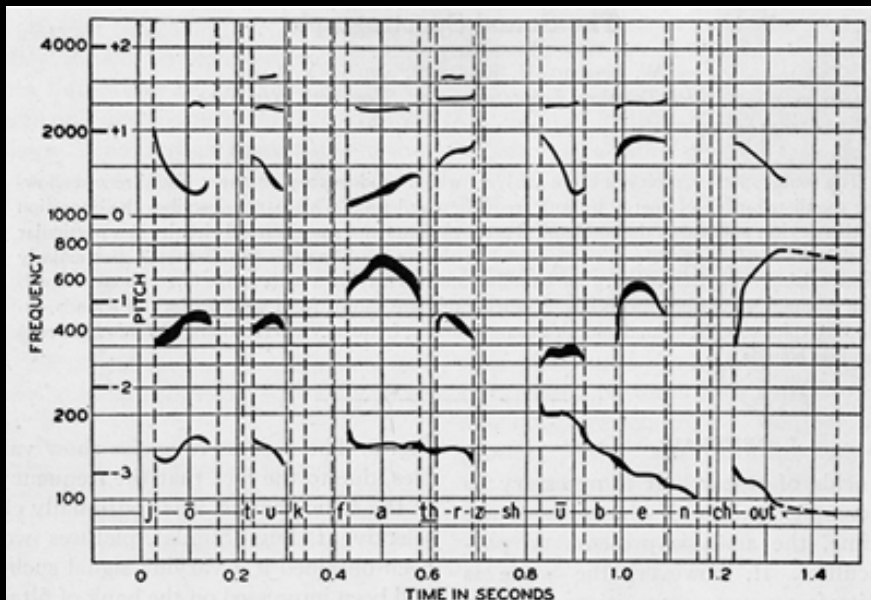
Sixth sharp.

Sixth flat.

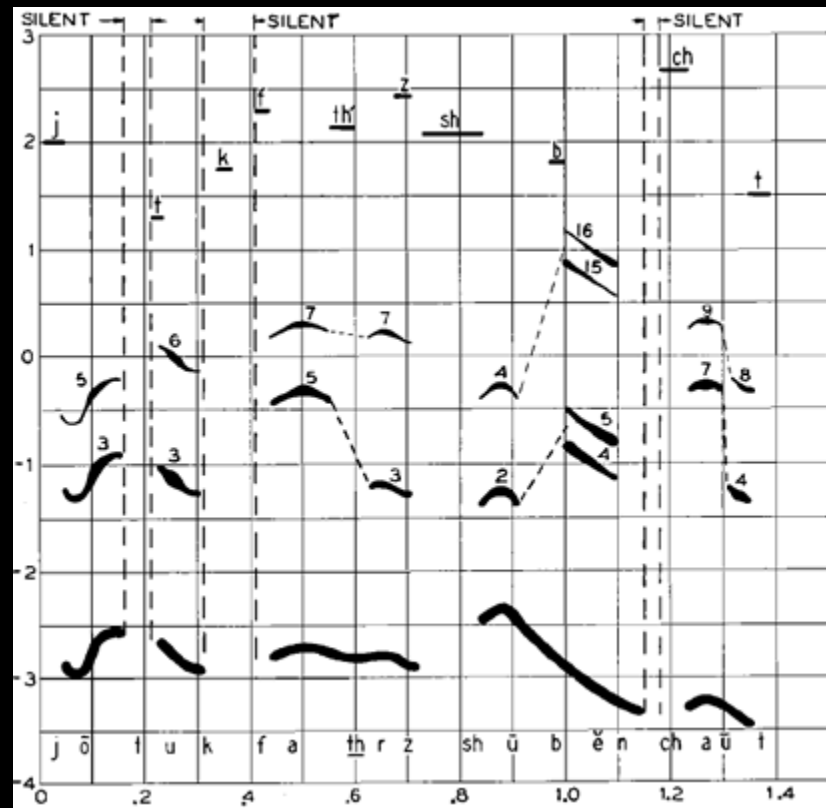
Francis North, 1677



“Joe took father’s shoe bench out”



John C. Steinberg, 1934



Harvey Fletcher, 1931



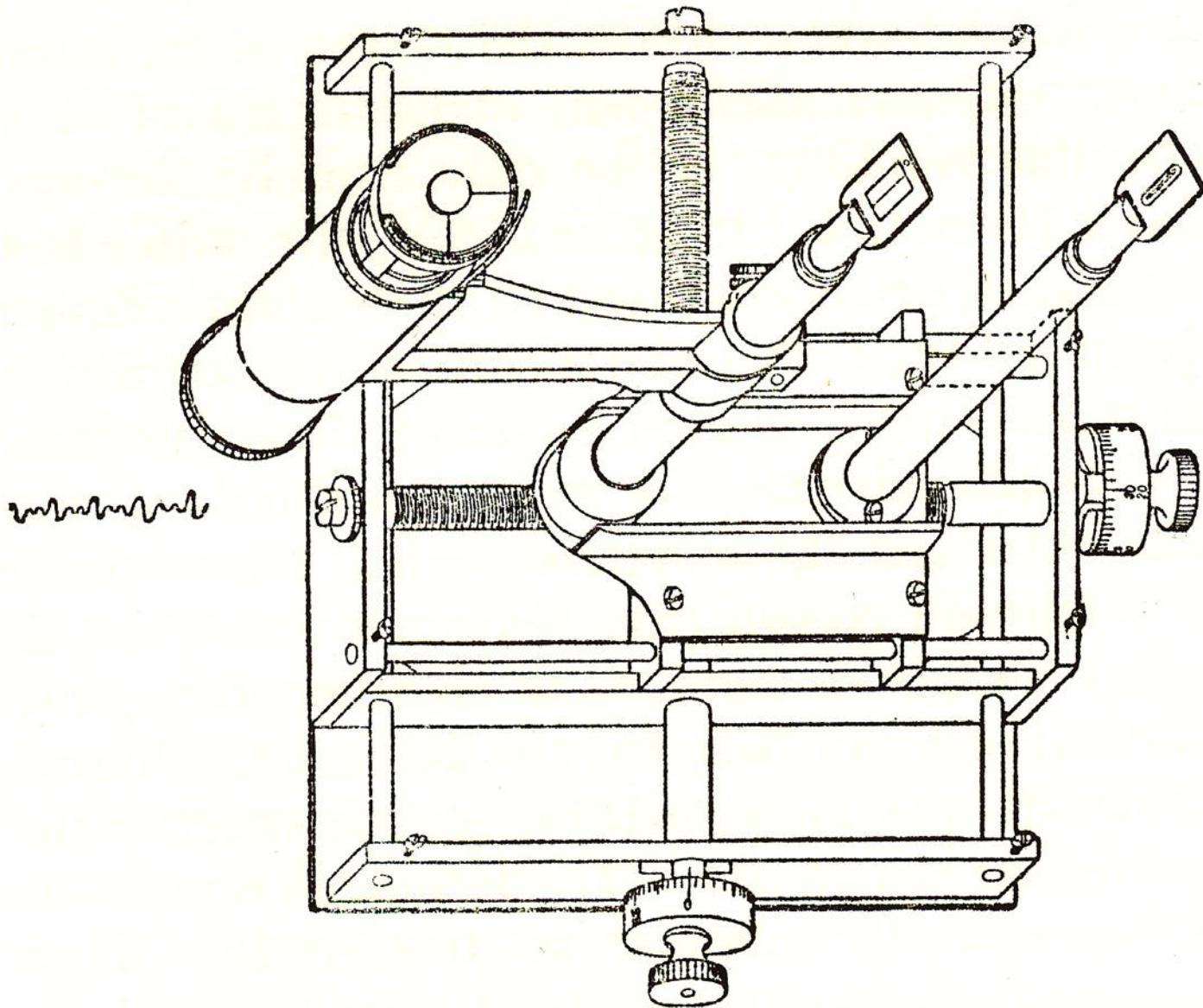
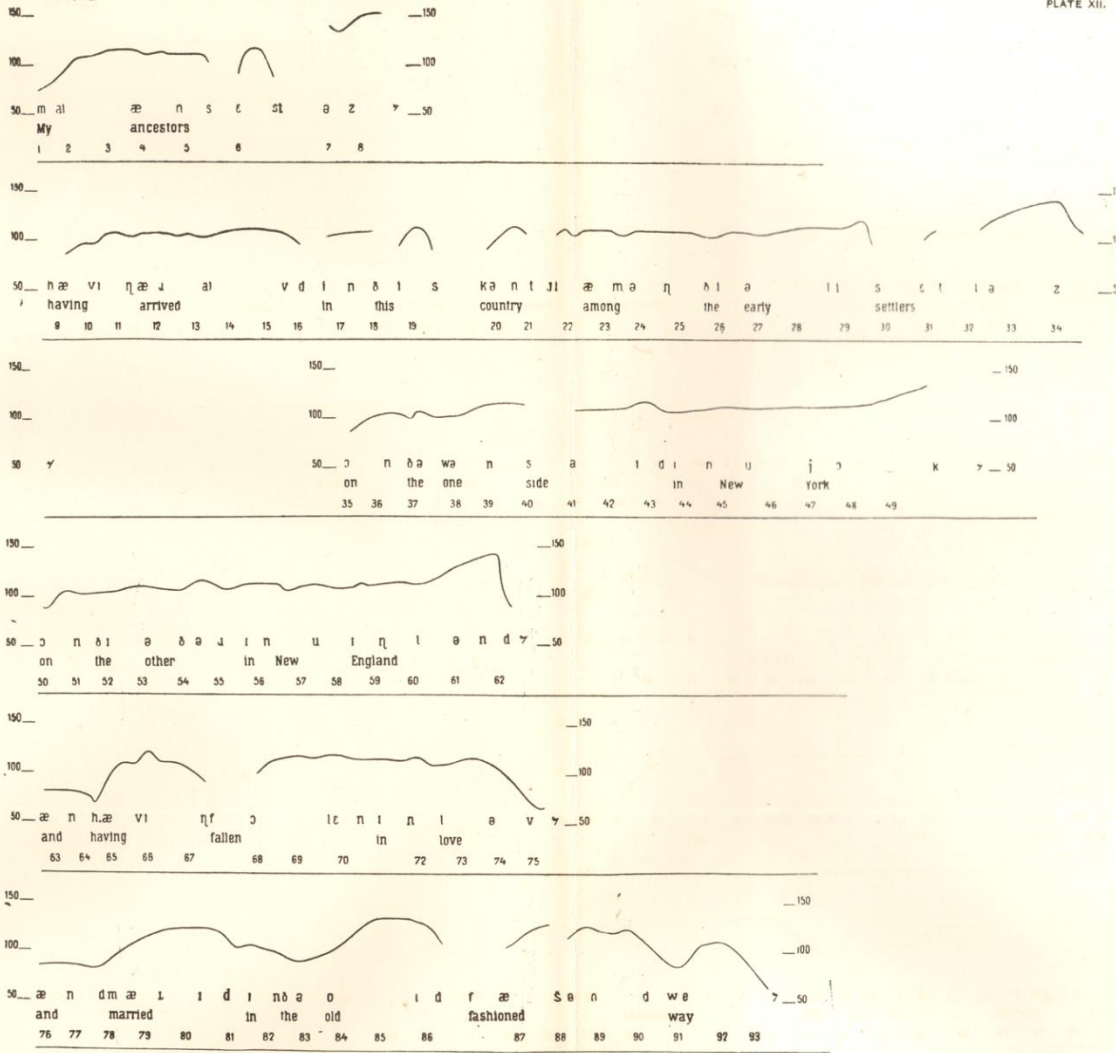


FIG. 45.—Coordinate measurer.



MELODY OF BEGINNING OF "SPEECH ON FOREFATHERS' DAY."

“My ancestors having arrived in this country among the early settlers, on the one side in New York, on the other in New England, and having fallen in love and married in the old fashioned way...”

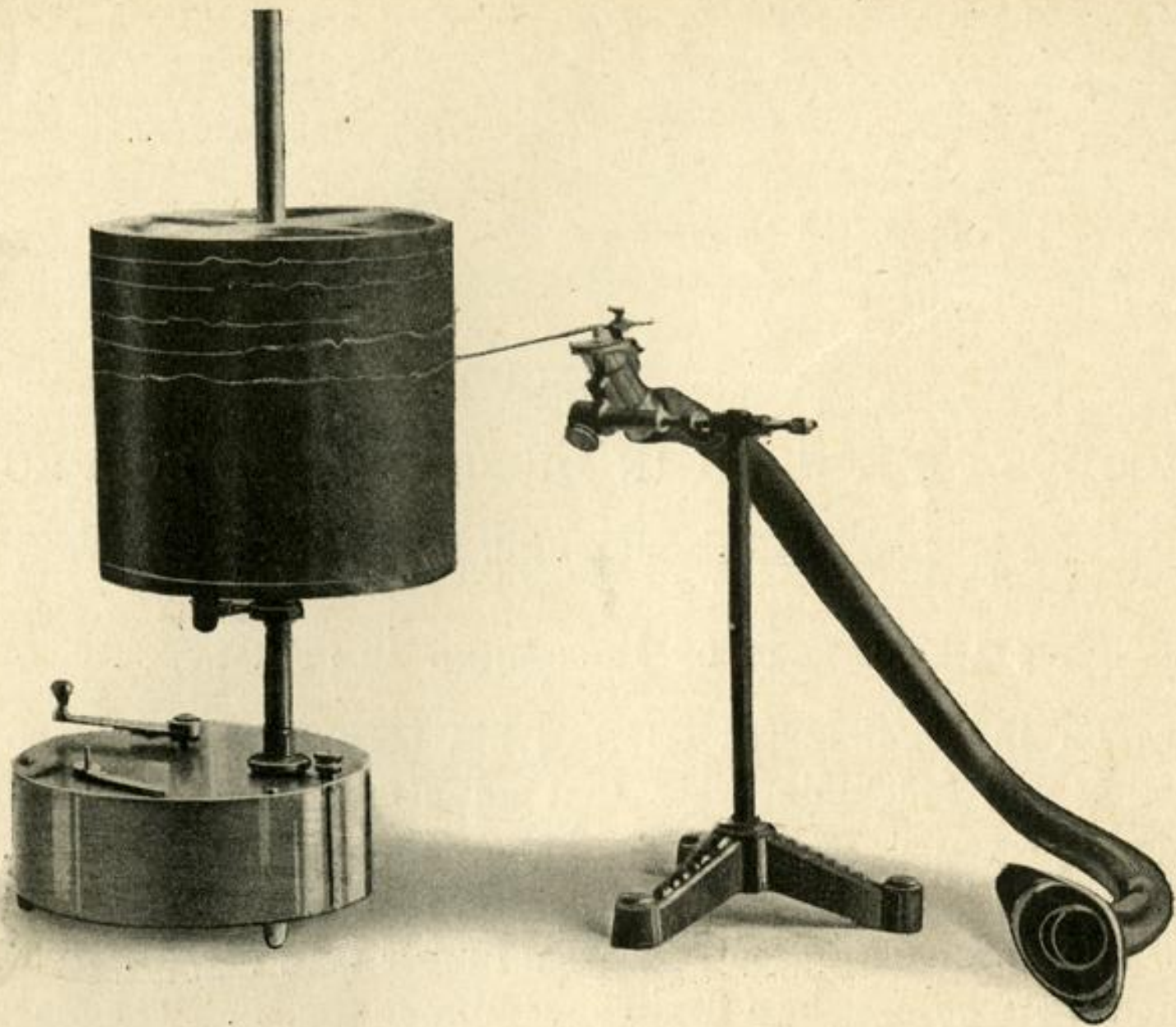


FIG. 1.—Recording speech by the phonautograph method. The vibrations and puffs of air pass to a flexible membrane, whose movements are recorded on a revolving drum by means of a light lever.

registers the sounds between "g" and "m." These include the two vowels "o" and the "h" between them. In normal speech the larynx usually continues to vibrate during an "h" between two vowels. The "m" is recorded by a base line with faint waves ending in a kind of explosion.

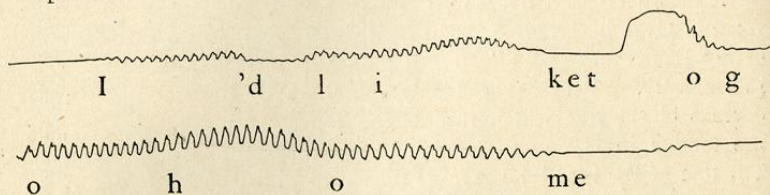


FIG. 5.—Record of "I'd like to go home," by a normal voice. The vibrations of the vowel "I" are cut short by a fall of the line at the beginning of "d." Faint vibrations are seen during the "d." The larger vibrations for "l" are followed by still larger ones for "i." These are cut short as the line descends for "k." The straight line for "k" is continued for "t"; there is no division between them. There is a strong upward movement that registers the puff of air (explosion) at the end of "t." The vowel "o" is very short. The "g" has faint waves. From the beginning of "o" through "h" and the next "o" there is an unbroken series of strong vibrations; the "h" between the two vowels is itself made into a vowel. The faint vibrations of "m" end in stronger ones.

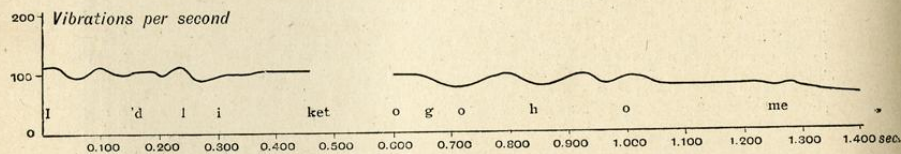


FIG. 6.—Melody plot to fig. 5. The speech curve in fig. 5 is supposed to be laid along the horizontal axis. The whole phrase lasted 1,400 seconds. Above the point where each wave of the record would come, a dot is placed that indicates on the vertical scale the number of vibrations per second that would be made by a tone with this wave length. The series of dots is the "melody plot." A line drawn through these dots indicates the rise and fall of the voice. The melody is seen to be constantly rising and falling in smooth fluctuations: this is a fundamental characteristic of a normal voice. For "kt" there are no dots, because the larynx does not vibrate during those sounds. The phrase starts at a tone of about 120 vibrations a second and falls slowly to one of about 60 at the end; the fall of an octave is the most frequent one in declarative sentences spoken by a Londoner.

The melody plot for fig. 5 is given in fig. 6. The dots lie somewhat irregularly around a line that is drawn to indicate their general position. These irregularities indicate on a magnified scale the normal minor irregularities of the laryngeal vibrations. The general course of the laryngeal tone is indicated by the line itself. We notice that the vowel starts at a little above 100 vibrations per second in "I." It fluctuates up and down within moderate limits during the sounds that follow. At "k" it suddenly stops, because the larynx does not vibrate during

She seemed to be an advanced case of this disease, showing the somewhat unusual features of very rapid progress and great mental disturbance. When I attempted to take records the patient simply asked continually, "Have I a father and mother?" With some difficulty she was induced to speak into the apparatus. After a time she became quite at ease.

She died twelve days after admission. At the autopsy, the following observations were made: There was wasting of the leg muscles, especially on the right. There was no thickening or opacity of the cerebral membranes. Extensive sclerotic areas could be seen in various parts at the base of the brain. The lungs showed areas of broncho-pneumonia.

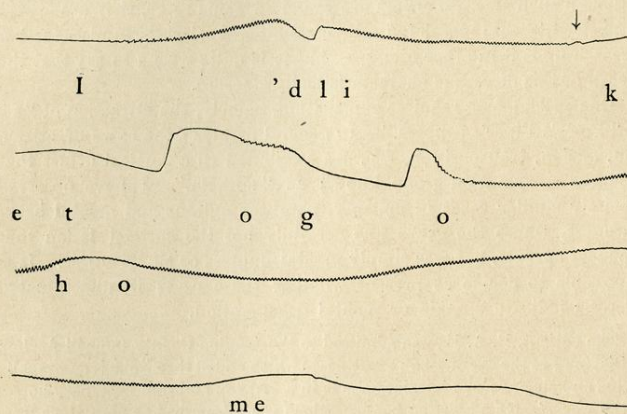


FIG. 17.—Record of "I'd like to go home," by E. A. E. The record is nearly twice as long as a normal one. The "d," "t," and "g," all show their occlusions (descent to the base line) with explosions (sharp rise). The "k" shows a rising line that indicates an incomplete closure of the mouth by the tongue. The vowels are very long. The "m" is lost in a long expulsion of breath.

A record of "I'd like to go home," by E. A. E., is shown in fig. 17. The "I" is breathy (as shown by the rise of the line) and long. The "d" is not a sudden drop in the line as it should be normally, but is a gradual descent; this denotes that the first portion is breathy. The explosion is even more distinct than in a normal record. The "l" is quite distinctly marked. The "i" is long. The slow descent of the line shows that the "k" is fricative instead of occlusive, that is, that the tongue does not completely close the mouth passage. The "k" is quite

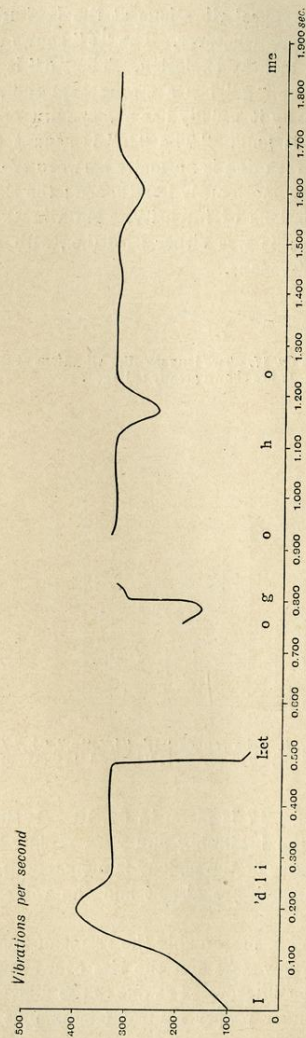
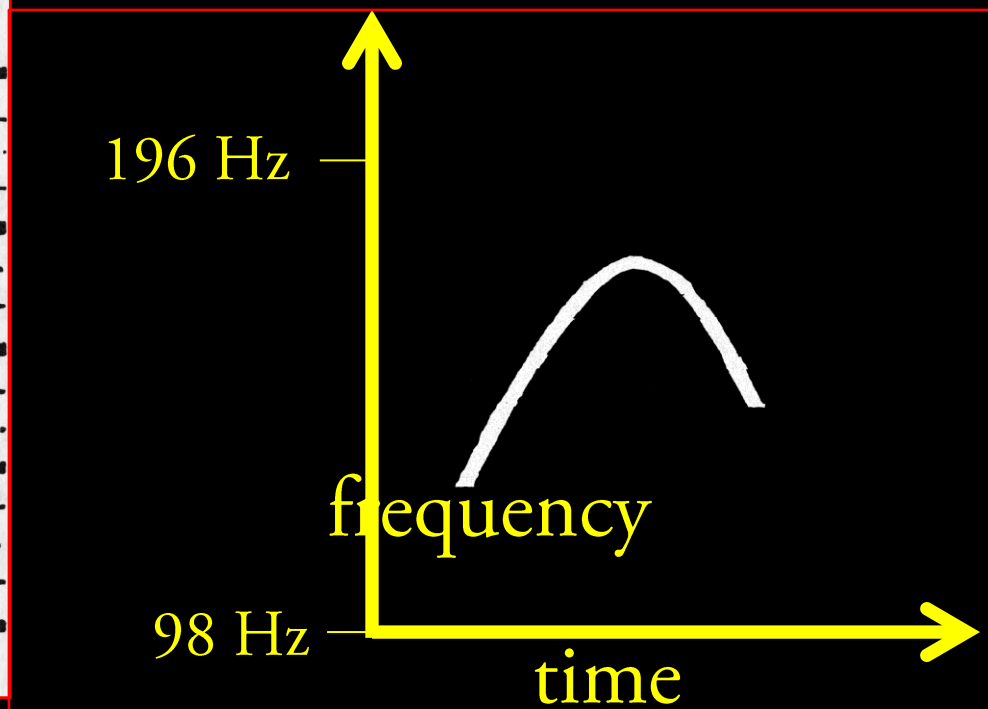
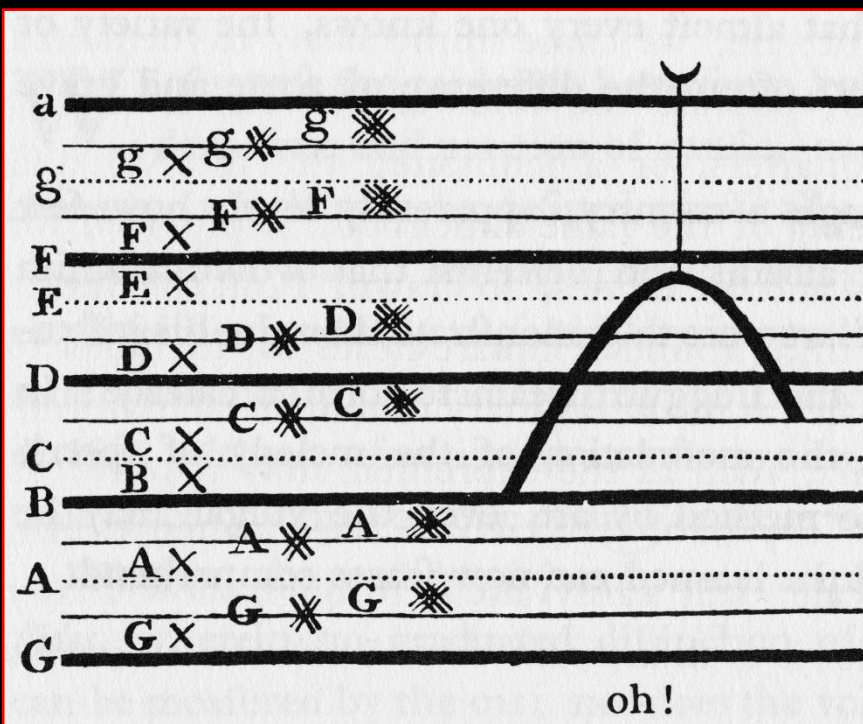


FIG. 18.—Melody plot to fig. 17. The tone rises rapidly from a low pitch of 100 to nearly 400. It finally settles on a pitch of about 325 which is the general pitch of the sentence. At the end of "i," it suddenly drops to a very deep pitch for two vibrations. When it starts again in "o" or "to" it again begins low and rises abruptly. There is some fluctuation in the remainder of the word, but in general the tone is quite monotonous, not even falling at the end.

Joshua Steele, *An essay towards
establishing the melody and measure of
speech to be expressed and perpetuated
by peculiar symbols.*

1775

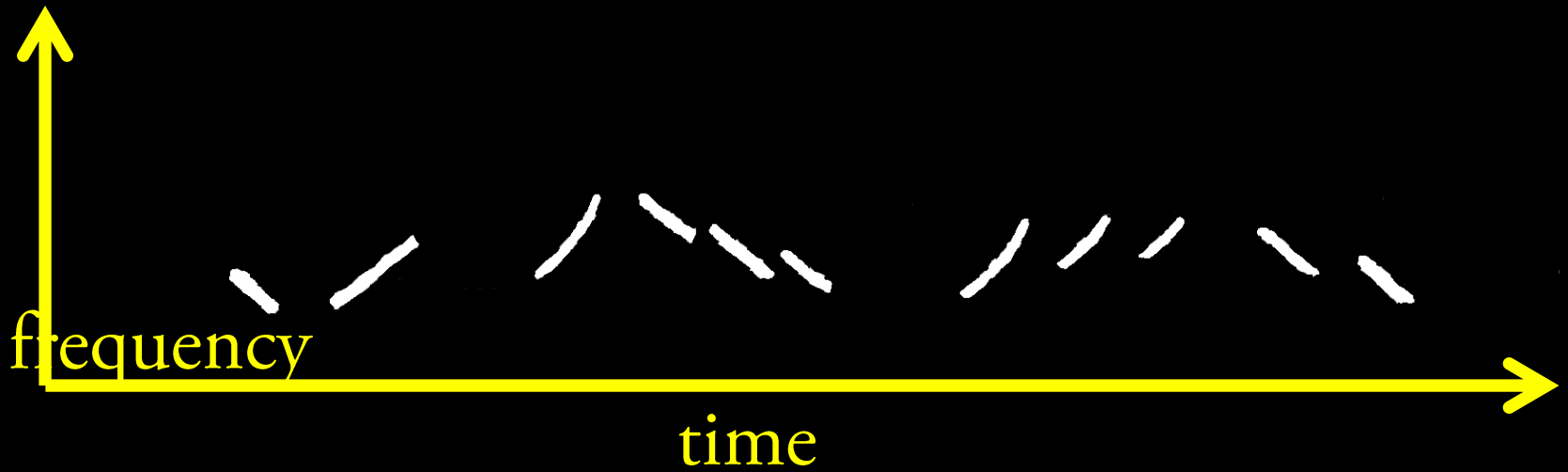


1775

Largo.

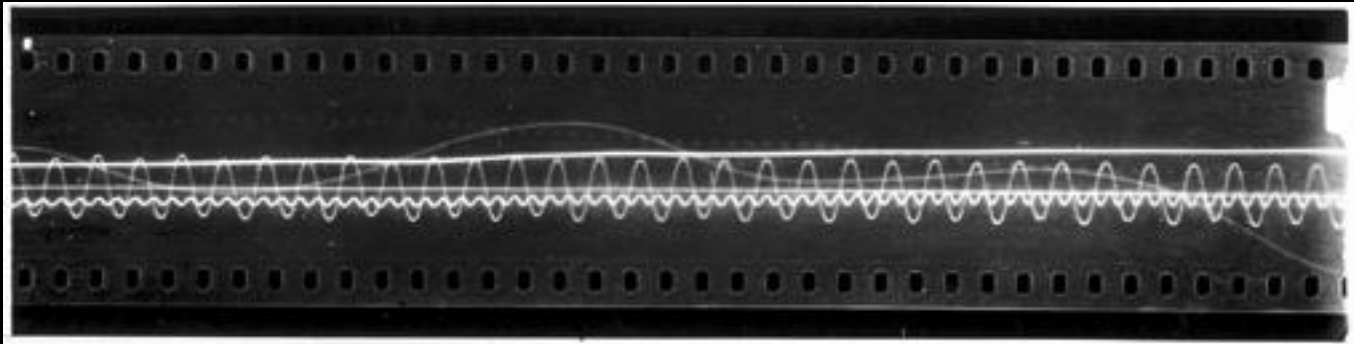
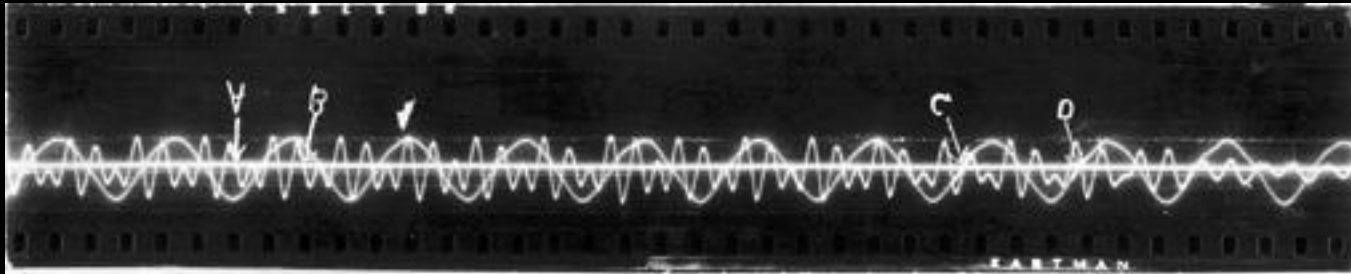
$\Delta :: \Delta :: \Delta :: \Delta \dots :: \Delta :: \Delta :: \Delta :: \Delta ::$

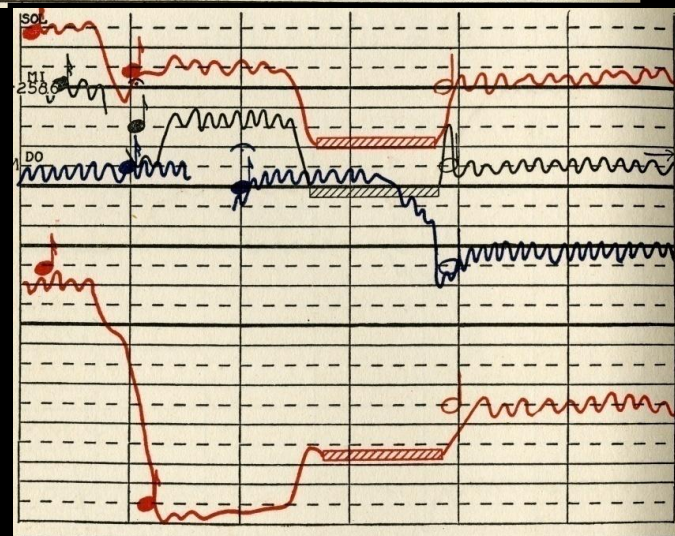
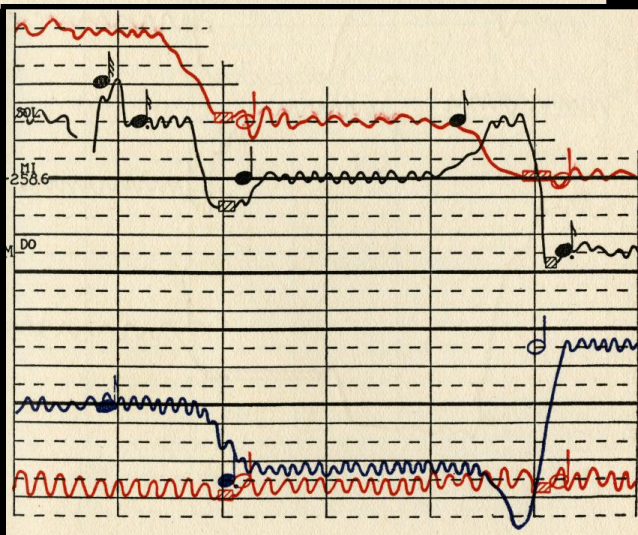
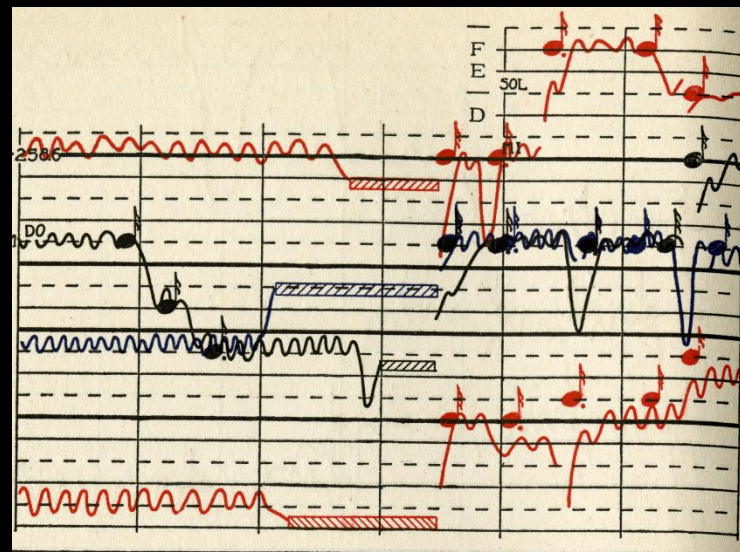
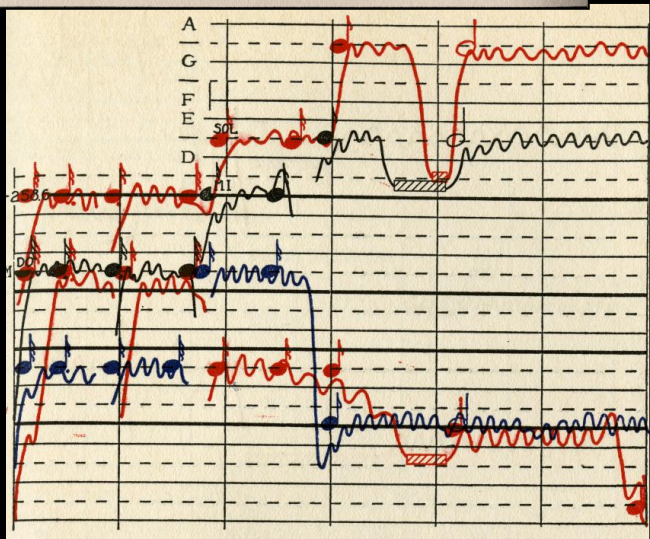
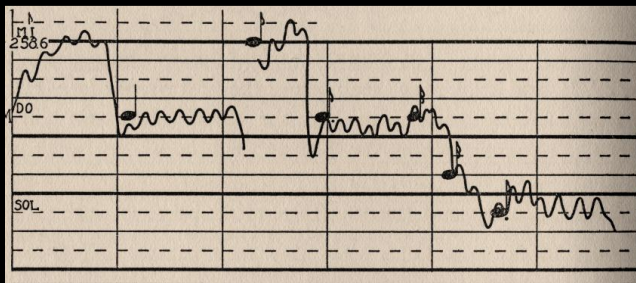
To be! or not to be? that is the question.



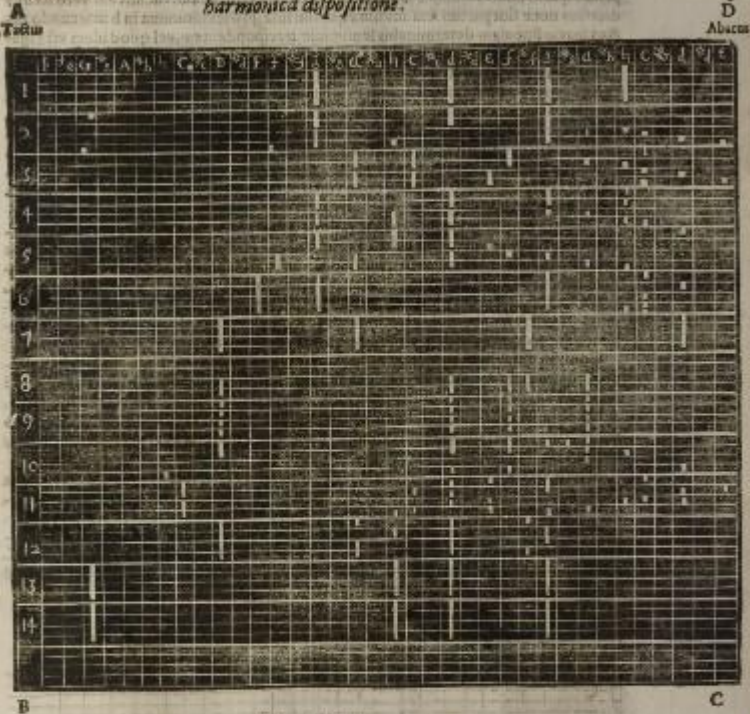


Milton Metfessel
phonophotography





Cylindrus Phonotacticus in planum proiectus, una cum acutum
harmonica dispositione.

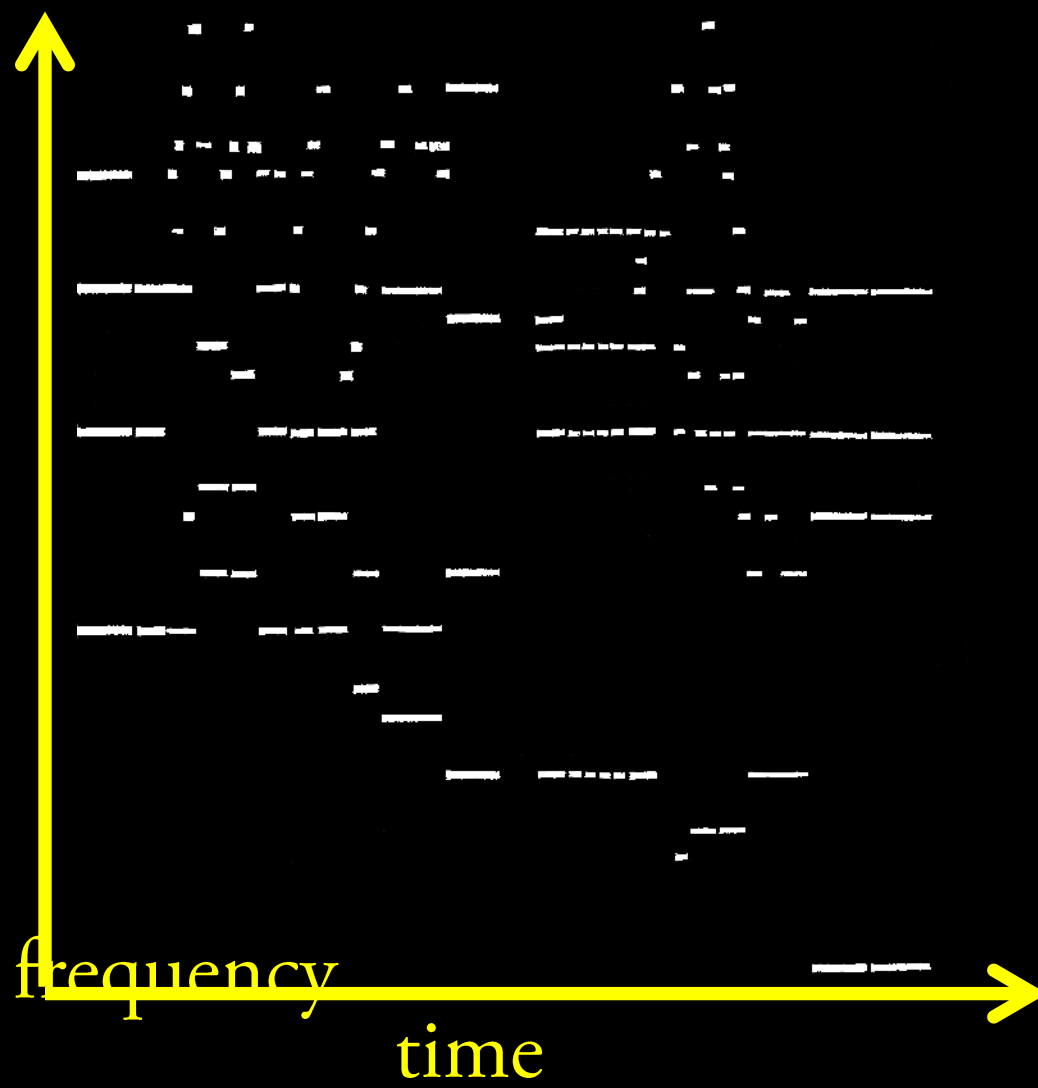


Exemplum.

Non secus in alijs vocibus Alti & Tenoris procedendum est; Et enim in omnibus una operandi ratio; Verum cum suprema vox studio diminuta sit, & clausis aliquantulum celeribus sit instituta, quomodo ille intra quadratum phonotacticum, transferatur, paucis hic ostendere visum fuit, ne quisquam superesse, quod dubium est, quod mouere possit.

Nota igitur singulas semibreues notas totum penpe vnius tactus spacium in quadrato phonotactico occupare; Dixi prope, quia non totum spacium explete debet, vt in minimis dicitur secundi tactus nota; Minimam vero occupare fere mediam spacij vnius tactus parte, semiminimam vero 4 fere spacij vnius tactus partem; salam; semilulam deniq. 2/3 dicit spacij partem, & sic de ceteris; Cum igitur suprema vox assumptis celeritate sit

R x s celer-



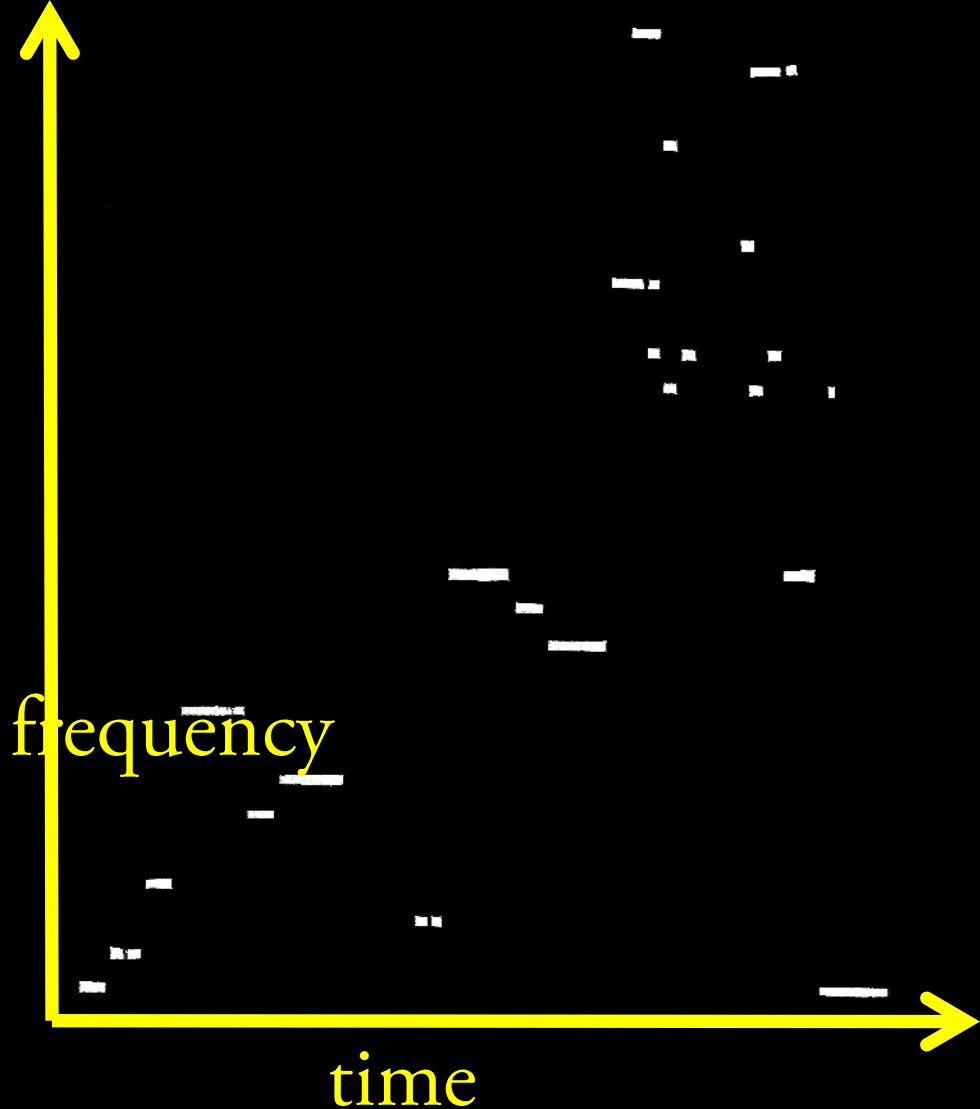
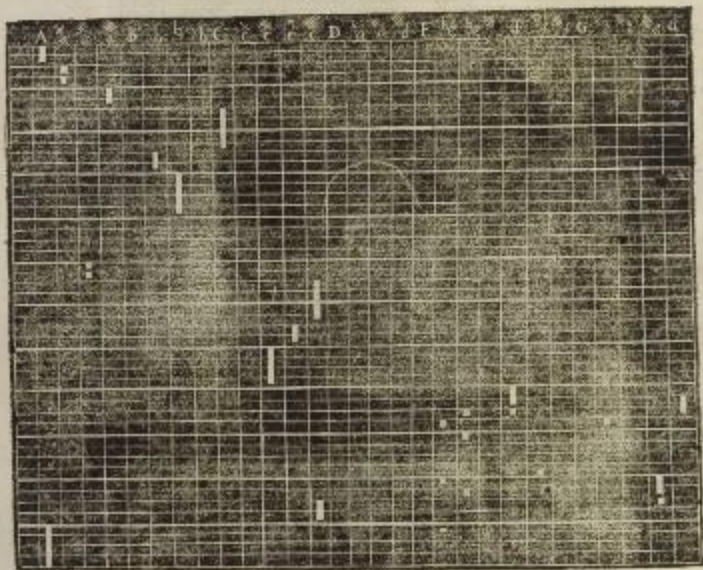
Athanasius Kircher,
Musurgia Universalis, 1650

Paradigma V.

Chromaticas & Enharmonicas clausulas in cylindrum transferre.

Chromaticū Enharmonicūq; genus tam difficile ac arduum est, vt multi Musici non dicam illud cantare aut sonare, sed ne quid nominis quidem sit, percipiant, putentque paradoxum esse musicum, & cantatu à seorsum, fateor & ego rei difficultatem, cum enim subtilissima interualla habeant hæc genera, vix fieri posse videtur, vt vox humana tam subtilia interualla exacte & distincte exhibeat. In instrumentis eos aliquantulum meliorem successum fortietur, quia tamen vix ex artificibus sunt, qui subtilia huiusmodi interualla exacte tangant, res adhuc summa in patitur difficultatem. At in nostro cylindro phonotactico, res omnino facilis est, ita vt nulla alia ratione perfecte, exacte & distincte huiusmodi genera exhiberi posse putem, quam in huiusmodi automatis, in quibus omnia quantumuis minima interualla tam exacta diuisione disponi possunt, vt infallibilem effectum sortiantur. Vt igitur huius rei specimen quoddam videas, monodiam hæc chromatico-enharmonicam in cylindrum transferre doceamus, vt nihil adeo in vniuersa Musica abstrusum & reconditum, quod Ars nostra phonotactica non exhibeat, excogitari possit.

Monodium Diatonico Chromatico. Enharmonicum in Cylindro phonotactico exhibendum.



Athanasius Kircher,
Musurgia Universalis, 1650

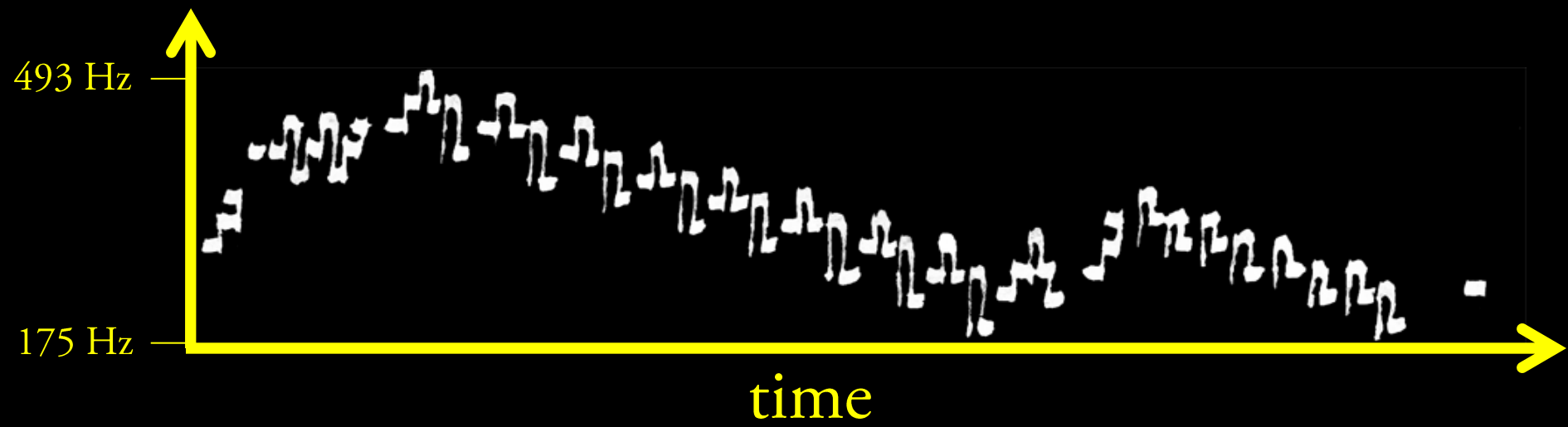
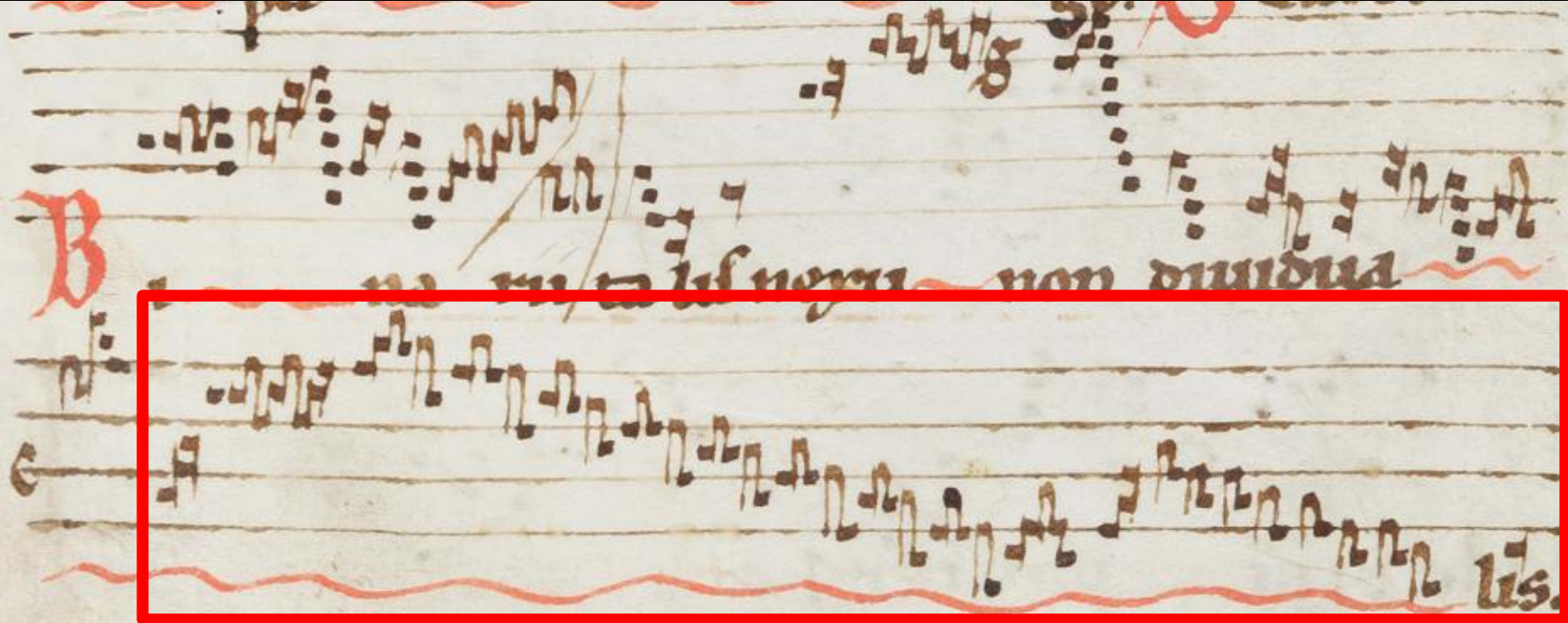
351
1

Sanctus **A**rchetipi
mundi stat nutu
cuius ymago
Sanctus **S**umma sophia
noys prothopanton
prima propago. **S**anctus
Binarii talis nexu non diuidua
lis.

St. Gallen,
Stiftsbibliothek,
Cod. Sang. 383.

Lausanne,
before 1250.

*Sanctus Archetipi mundi
stat nutu cuius ymago
Sanctus Summa sophia
noys prothopanton
prima propago. Sanctus
Binarii talis nexu non
diuidualis.*



^{so} ^{os}
 .viii. No q̄ uiuim^s benedicim^s do ex hoc nunc
 mi et us
^{ex} ^{os} nū q' secu
 .v. No qui uiuim^s benedicim^s do ex hunc lu
 mi et us in uas
 nū q' secu
^{so} ^{of} lu
 .i. No q̄ uiuimus benedicim^s do ex hunc m un
 mi et us
 nū q' secu
 lu
 in n

Scolica enchiriadis

Staatsbibliothek Bamberg

Msc. Class 9, Lorraine (?), end of 10th century

300 Hz

No^{os} q̄m̄m̄ benedict̄m̄ do ex hoc nunc
mi et us

No^{os} qui uiuim̄^s benedict̄m̄ do ex h̄ nunc lu
mi et us in uat̄

No^{of} quam̄^s benedict̄m̄ do ex h̄ nunc lu
mi et us in uat̄

No^{of} quam̄^s benedict̄m̄ do ex h̄ nunc lu
mi et us in uat̄

No^{of} quam̄^s benedict̄m̄ do ex h̄ nunc lu
mi et us in uat̄

75 Hz

No^{of} quam̄^s benedict̄m̄ do ex h̄ nunc lu
mi et us in uat̄

es

tris septernus

us

pa

fi li

Tu

es

tris septernus

pa

fi

es

li

Tu

tris septernus

us

pa

fi li

Tu

es

tris septernus

pa

fi

li

Tu

us