

## 287700, 287701

These are two examples chosen from a large group of vertically cut phonograms made in wax surfaces applied to substrates made of **binder's board**—a thick cardboard used for making the covers of books. There's little I can say about these two discs *individually*, but I can make some generalizations about them as a *type*, and as subtypes of that type.

In my notes on 287920, I described Chichester Bell's work recording in wax compositions applied to glass and brass discs during 1883 and 1884, and I speculated that the glass and brass supports were probably cleaned off and reused repeatedly because of the relatively great expense and effort invested in them. Such recycling would help explain why so few Volta recordings from this period survive (with the exception of the glass photographic plates, which by their nature couldn't be reused for new experiments after exposure). No Volta recordings of any kind have turned up with written dates in 1883, and none in wax compositions have turned up with written dates in 1884.

By February 1885, however, discs were being made of wax or wax-like compositions on thin cardboard. We know this because some of them survive with written dates on the back, for example:



287863—"thin | Feb. 18 / 85 | T N Gleeson"



287885—"Same words & | style | 16<sup>th</sup> Feby | HGR"



287729—"AGB Feb 6 1885 | H G Rogers | Feb 6<sup>th</sup>/85 | T.N.G."



287711—"20<sup>th</sup> Feby 1885 | style indirect | HGR." (Modified 1890)



287862 [1]—"7<sup>th</sup> March | Glue & Plaster | under foil | HGR



287730—"Pitch | March 5<sup>th</sup> 1885 | T.N.G."

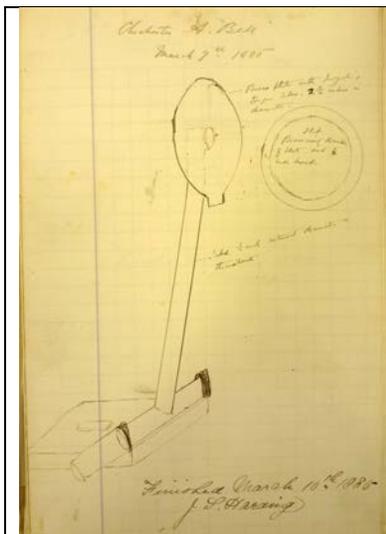
On 27 March 1885, Chichester Bell wrote about a couple recently-built phonographs:

**{CBN 7:9}**

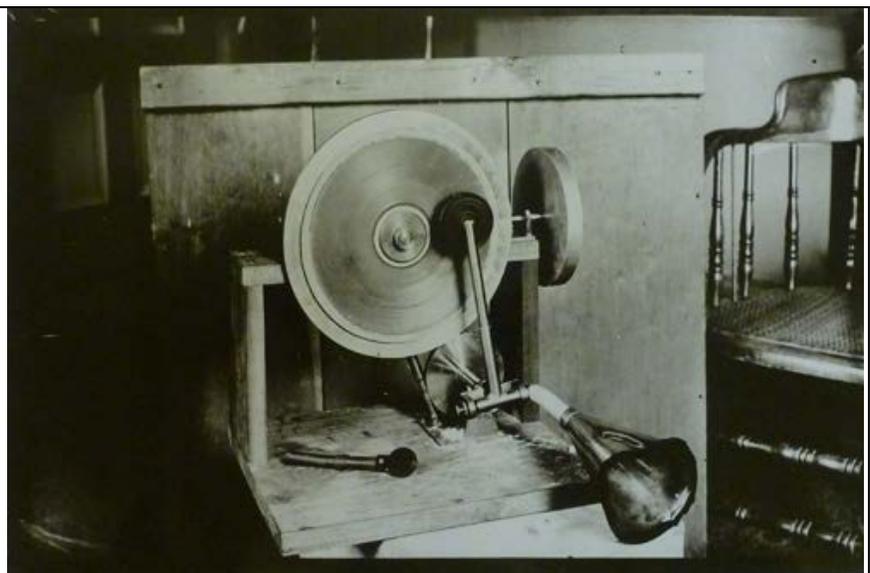
During the past six weeks or so, I have made a very great number of phonographic experiments, with a view chiefly to simplifying the Edisonian method of recording and reproducing.

I have had two new mac[h]ines constructed, in one of which the recording disc, instead of sliding along a platform, rotates round an axle, while in the other the disc is stationary, but the recording style slides in front of it. The first of these was finished a couple of weeks ago, while the second was completed yesterday. It would be impossible for me to sketch these from memory, so that I postpone descriptions of them until I can make diagrams in the laboratory, or have them photographed.

He further described a new recorder and stated that he had made some phonograms with it (CBN 7:9-10). The description given of the recording assembly, and a working drawing of it dated 7 March 1885 (below left), seem to match the one shown in a photograph taken in the Volta Laboratory (below right). The photograph has been associated with the date 1884 in the past, but the original negative is actually undated.

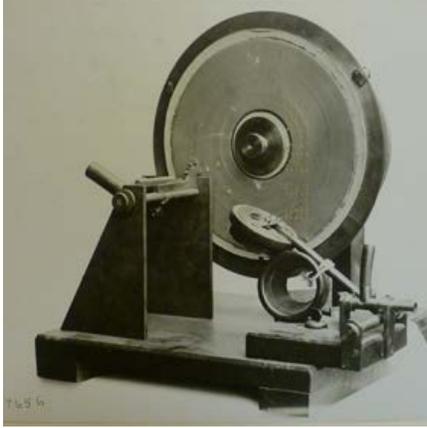


CBTD 20r



Smithsonian negative 44,312-F, associated with 287656  
Original glass negative is 287855 [15]

Note that the machine shown in the photograph shows a disc that appears to be wax composition on some kind of cardboard. The same exact disc is shown—now a bit scratched up—on later Smithsonian photographs of a different Volta phonograph (287655):



Neg. 27656



Neg. 27657

I haven't yet examined this disc—which is probably still on the machine—and so don't know whether the backing is thin cardboard or binder's board.

In any case, the phonograms Chichester Bell made on the new phonographs completed in March 1885 were probably still on thin cardboard backings until 13 April 1885, when he noted:

{CBN 7:12} Have lately obtained at Easton & Rupp's some extra stout binder's board, which serves admirably for making record discs. The discs having been cut out, the board is soaked in paraffin heated well above 100°C. and allowed to cool under pressure. The discs are then set in a sort of frame, and while still cold, have paraffin-wax mixture poured over them. When the mixture is set the surface is turned off on the lathe and the discs are ready for use. These discs are exceedingly stiff, and may be used on the phonograph without any backing, being simply clamped at the centre. If the wax layer is tolerably thick to start with, it may be turned off and used several times.

"Easton & Rupp" were William B. Easton and William H. Rupp, who apparently ran a stationery business in Georgetown.

The earliest dated discs of wax composition on binder's board are dated 13 and 15 April 1885, so it seems this date marks the introduction of this material, just as the notebook entry suggests.



287871: Around center area in pencil: “AGB | April 13 1885”; seems to have had a wax surface that is now missing.



287907: In wax at center: “AGB & CAB | April 13 1885 | Not | so | good | as usual | AGB | Stock quotations | from Boston Journal | of April 6—taken | from N. Y. letter”



287881-A: In wax at center: “Record made April 15 1885 | AGB and C.A.B. | to test reproduction of numbers. | Disk A. G. B. No. 1”

The above are, in fact, the only *dated* binder’s board discs of ~23 cm diameter with spindle holes of ~25 mm in diameter—all prepared on 13 or 15 April 1885. By contrast, binder’s board discs dated in November 1885 (287909, 287910) and thin cardboard discs dated January 1886 (287819, 287821) are much smaller in diameter, suggesting a general switch in size before that point. Hence we can tentatively date all discs of this general format to mid-1885. The discs Alexander Graham Bell and his associates made in 1890 are distinctively different from these, with small spindle holes and black ozokerite recording surfaces.

287699 and 287700 both have the word “Japan” written on the back. This refers to **Japan wax**, which Chichester Bell had begun experimenting with about the time of a note he made on 15 May 1884:

**{CBN 6:38}**

I have within the last few days tried various substitutes for paraffin-wax in making records.

Japan wax if once obtained in a good layer answers admirably being somewhat tougher than paraffine wax mixture. But as it contracts greatly on cooling cracks are very apt to form in a thin layer of it, and it has a tendency to separate from the substratum.

A mixture of equal parts of beeswax and Japan wax also contracts greatly on cooling. When slowly cooled a layer of it tends to separate into pentagonal columns. When rapidly cooled it splits irregularly.

A mixture of two parts Japan wax to 1 part paraffine makes a very good layer, which turns off to a good surface, well adapted for making records. It is however a little soft, and has a greater tendency than paraffine wax mixture to “burr”. I am inclined to think it better than paraffine-wax-cocoa fat as a soft recording material.

To-day I propose trying a mixture of two parts paraffine to one of Japan wax.

Consistent with these observations, the surfaces of 287699 and 287700 are both severely cracked.

Perhaps Chichester Bell thought Japan wax might fare better on binder's board in 1885 than it had on glass or brass back in 1884.

Unlike the "Japan" discs, most binder's-board phonograms have no written markings on them, and 287701 is more typical than 287700 in this respect.

287701 also belongs to a distinctive subset of binder's-board discs with notches in their circumferences:



two notches: 58498.11



four notches: 287701



four notches: 287900



six notches: 287868-A



six notches: 287882



six notches: 58498.35



six notches: 58498.36

I presume these notches were part of some plan to hold the disc more firmly into the apparatus, and the irregular spacing of notches on the six-notch discs suggests that additional notches (or corresponding parts of the equipment) were added over time: first *two*, then *four*, and then *six* with two more squeezed into the pattern. *Three* objects looking a bit like clamps can be seen in the appropriate places in the photographs of 287655 reproduced above.