



the Heliophone

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Summary

Hundred and fifteen years after Alexander Graham Bell and his assistant Charles Sumner Tainter have explored the photoacoustic effect, we have revisited the design of their photophone. Since the construction is built to collect and convert sunlight to sound in an optimum way and without electronic amplification, we have baptised the new device as heliophone. The light is focused to a photoacoustic piston surface in the photoacoustic cavity by means of a compound parabolic collimator, and its intensity is modulated by a mechanical chopper. Besides optical design optimization, we have also conducted an acoustic optimization to maximize the radiated acoustic sound power of the photoacoustic cell cavity and horn assembly. The optimization made use of tests and tuning of an intermediate photophone device.

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