

Parts per million atmospheric CO₂ by year with annotated time region representing the life span of Eunice Newton Foote.^{2,3}

| In Common Air. | | In Carbonic Acid Gas. | |
|----------------|---------|-----------------------|---------|
| In shade. | In sun. | In shade. | In sun. |
| 80 | 90 | 80 | 90 |
| 81 | 94 | 84 | 100 |
| 80 | 99 | 84 | 110 |
| 81 | 100 | 85 | 120 |

Foote's temperature data from trials of heating two glass cylinders (one filled with air and the other with CO₂) in varied amounts of sunlight.^{2,3}

'An atmosphere of that gas would give to our earth a high temperature; and if as some suppose, at one period of its history the air had mixed with it a larger proportion than at present, an increased temperature... must have necessarily resulted'. -E.N.F., *On the Heat of the Sun's Rays*, 1856¹

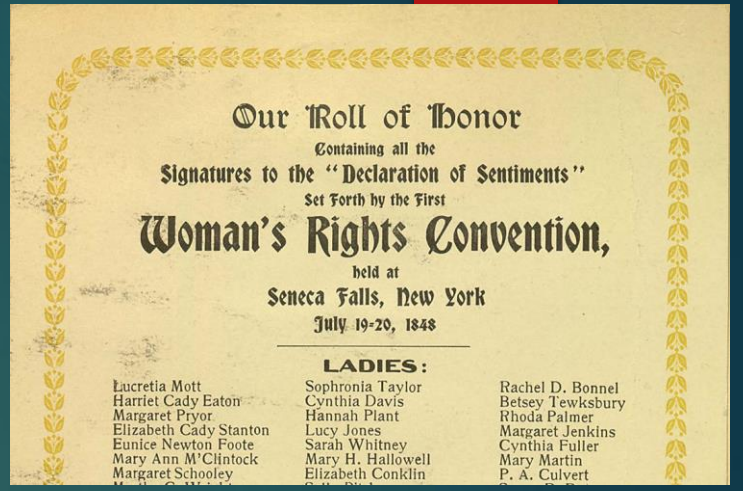
Eunice Newton Foote

1819-1888: SCIENTIST AND CIVIL RIGHTS ACTIVIST WHO SIGNED THE WOMAN'S RIGHTS CONVENTION DECLARATION OF SENTIMENTS.

1. Eunice Foote, "Circumstances Affecting the Heat of the Sun's Rays," *The American Journal of Science and Arts* 22, no. 66 (November 1856): 383-384.
 2. Signature page of the Declaration of Sentiments, U.S. Library of Congress.
 3. Alice Drinkwater, "'It Is Because of the Brave Women of the Past That We Can Enjoy the Freedoms That We Have Today.'" *University of Edinburgh Science Media* (8 Mar. 2022)

Eunice Foote developed a study with two glass cylinder receivers and a vacuum pump to test the effects of different air compositions on the heating effect of the sun's rays. She set up three experiments to probe different factors, but maybe the most notable was for air versus CO₂. Her findings were that the bottle with CO₂ was hotter.

She pointed out the potential atmospheric effects of this phenomenon in her publication of the work in 1856 in the *American Journal of Science and Arts*. This was several years prior to Tyndell's Greenhouse Effect study. Eunice was also an inventor, but her husband held most of her patents.



Declaration of Sentiments signed by Eunice Newton Foote at the Woman's Rights Convention in Seneca Falls, 1848.²



Eunice Newton Foote and her dog.³

Message In a Bottle

Adapted from the song by The Police

- ▶ Just a scientist, a woman in her lab, oh
Another experiment, sunrays' turn to heat, oh
More questions now, what is in the air?
Receivers jump in temp when carbon dioxide's there, oh
- ▶ I'll send an S.O.S to the world
I'll send an S.O.S to the world
I hope that someone gets my
I hope that someone gets my
I hope that someone gets my message in a bottle, yeah
Message in a bottle, yeah
- ▶ Four years have passed since I wrote my article
I should have known this right from the start
Only men get the credit due them
Publishing can bring you fame, but not for me, no
- ▶ I'll send an S.O.S to the world
I'll send an S.O.S to the world
I hope that someone gets my
I hope that someone gets my
I hope that someone gets my message in a bottle, yeah
Message in a bottle, yeah
Oh, message in a bottle, yeah
Message in a bottle, yeah
- ▶ Walked out this morning, now I know why I feel
The sun's thermal rays raise temp up higher and higher
- ▶ Seems the atmosphere is full up of gas
Hundred billion particles, soaking up the sun
- ▶ I'll send an S.O.S to the world
I'll send an S.O.S to the world
I hope that someone gets my
I hope that someone gets my
I hope that someone gets my message in a bottle, yeah
Message in a bottle, yeah
Message in a bottle, oh
Message in a bottle, yeah
- ▶ Sending out an S.O.S
Sending out an S.O.S
I'm sending out an S.O.S
I'm sending out an S.O.S
Sending out an S.O.S
Sending out an S.O.S
Sending out an S.O.S
Sending out an S.O.S
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