

9 Oct '70

Memo.:

- 1) I trust that this draft approximates the letter you desired from me.
- 2) Please edit. If the changes are minor you can have it typed. If the changes are major you can use the { "Dennison" } = "Xerox" copy to indicate changes!
- 3) How shall we handle the "Chart"?

Do you think it is ^{essential?} desirable? ^{or} superfluous?

I do not know how to say it in words and convey the meaning with equivalent clarity.

- 4) I can try to draft the "figure"
- 5) Is it possible (and worthwhile) it can be drafted in your office - if you have the manpower?
- 7) In writing to me K. writes:

KONTRATI'EV

Where do you get your spelling?

P. R. GAST

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Dr. M.P. Thekaekara:
NASA, (322), Greenbelt MD 20771

Dear Dr. Thekaekara:

Your recent request for a written comment in support of the solar constant value of 135.3 ± 2.1 milliwatts cm^{-2} prompts me to review the reasons why I favor its (temporary) use.

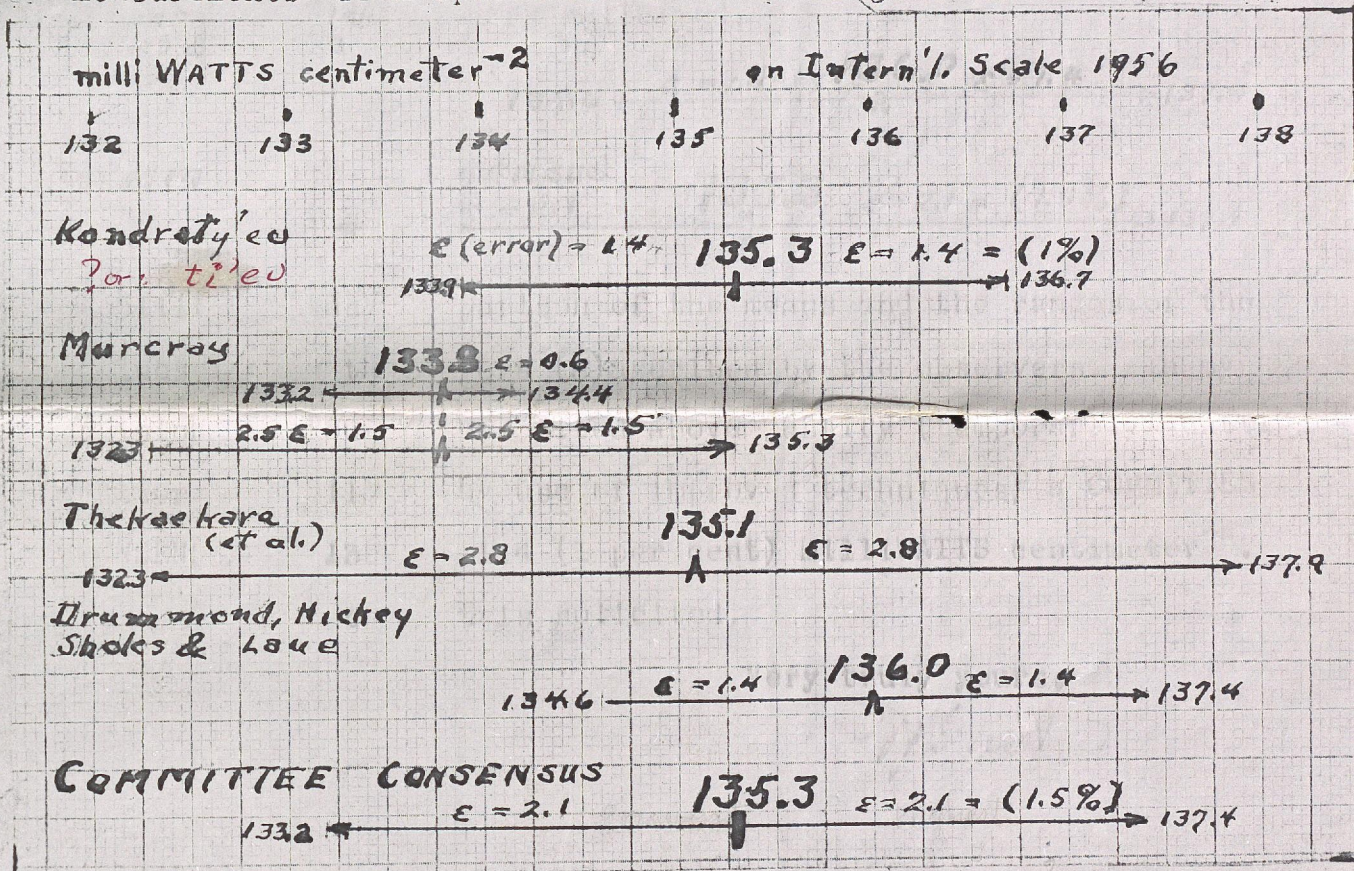
Under your chairmanship the members of the Eastern Committee ~~were~~ asked to judge some fifteen listed values so that a weighted average would represent the collective opinion of all.

The weights I assigned were so biased as to result in the lowest possible value---trending toward the measurement reported by Murcray. This was because I was involved in the design and calibration of the pyrheliometers used by the University of Denver and had every reason to believe that the error of measurement was less than one per cent---approaching 0.5 per cent. Description of the special ^{normal incidence, (NIPs)} pyrheliometers and part of the calibration effort is given by West & Kilinski (1967) ^{for NIP} description ^{see} pp. 76-79; ^{see} for auxiliary instruments and methods of measurements on the ground (which differed from methods used in balloon, ^{see} refer to Murcray, 1969) pp. 79-85; ^{see} for calibration, traced back through Eppley-Angström Pyrheliometers Nos. 6900, 7010 and 7258 to the Eppley Working Standard No. 2028, ^{see} pp. 60-76, 96-124. Thus the ^{lowest} and the ^{highest} estimates which I used in weighting for the average ^{namely:} (Murcray '69 and Laue & Drummond '68) ^{choice} are ^{referable} to the International Pyrheliometric Scale as maintained by Standard Angström instruments at the Eppley Laboratory.

None of the ground based measurements was used by me in arriving at the estimate of the solar constant which I recom-

mended to you. The ground based estimates seem to me to be defective on two counts: first, the errors are relatively large; second, the purported values can not be referred back to the '56 International Pyrheliometric Scale nor is the ratio $\frac{\text{Black Body SOURCE}}{\text{'56 IPS RECEIVER}}$ established with a satisfactorily small error.

Rather than dwell on minutiae in ascribing weights to measurements from spacecraft I used a diagram as below. This



facilitated easy comparison of the means and the ranges of the values within the errors (ε) ascribed by the observers. In my opinion the four values cited above justify (temporarily—until better is available by use of improved techniques) a COMMITTEE CONSENSUS of 135.3 ± 1.4 (1 per cent) milliwatts centimeter⁻².

Your comment is solicited.

Very truly yours,

[Signature]

Note: same as Kondratyev

