

Letter No. 92807

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BUREAU OF STANDARDS

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Referred to

Department of Commerce and Labor

BUREAU OF STANDARDS

Washington

standard temperature

IW-271-C

November 13, 1909

Dr. Ch.-Ed. Guillaume,

International Bureau of Weights and Measures,

Sevrés, pres Paris,

France.

My dear Dr. Guillaume:

I have to acknowledge the receipt of your letter of October 25, in which you refer to a letter forwarded to us on June 22. I regret very much to state that this letter was by some oversight not called to my attention until today, especially since some of the items referred to therein are of the utmost importance. While a few of them have by this time answered themselves, I shall nevertheless for the sake of clearness refer to them in the order in which they occur in your letter.

1. We finally decided to obtain the sets of hydrometers about which we wrote to you from the successor of Greiner in Berlin, who made the former instruments for us. Our reason for this action was that they were urgently needed and we did not feel quite certain that Mr. Thurneysen would be able to comply with our specifications on the first trial. We shall probably

have other instruments made from time to time, and we shall take pleasure in giving Mr. Thurneysen a chance to make some of them for us.

2. The thermometers and certificates referred to in your letter have both been received, the thermometers having been brought over by Dr. Burgess a few days ago.

3. We find in this country a strong objection, even among scientific men, to the use of the temperature 0°C as the standard for practical purposes, and we are of the opinion that it would retard the use of the metric system in this country to insist upon all measuring apparatus being correct at this low temperature. It seems to me that it would be far better to have the standards both of length and capacity agree or nearly agree at the temperature at which they are commonly used, say 20°C , than to have them agree at 0°C , at which temperature they are rarely used. For example, to have brass, platinum, steel, and other length measures with widely different expansions correct at 0°C instead of at ordinary temperatures would not appeal to most users of such measures. The tapes used by our Coast and Geodetic Survey are all made so as to be approximately correct at 20°C . The same is true of all polariscopic apparatus and of the volumetric apparatus

used by chemists. We are strongly of the opinion that the temperature 20°C should be selected as the temperature at which all working apparatus should be standard.

4. I shall endeavor to interest our jewellers and dealers in precious stones in the adoption of the 200 milligram carat. It would be far better if we could get them to petition Congress to legalize such a unit than for the Bureau to request it.

5. As to the question which you raise concerning my serving as a member of your subcommittee on units of refrigeration, I beg to state that I should, of course, feel highly honored to serve with you and Dr. Glazebrook, and would be more than glad to do anything in my power to assist in bringing about international uniformity, but I have not kept closely in touch with the deliberations of the International Congress on Refrigeration. The proceedings of that Congress have not yet reached us. I understand that the publications have been issued. I should be very glad to receive a copy of your report. The advantages of international definition on the basis of the metric system naturally appeals very strongly to me, yet, if I should finally see my way clear to serve on your committee or to lend cooperation in some way, I feel that it would be best to bring the matter be-

fore some of the large refrigeration societies in this country for discussion, to more clearly ascertain the views of refrigeration engineers. I believe it would in this way be possible to get a better expression of the attitude of our engineers than would be possible from the relatively small representation that may attend an International Congress.

In this connection you may be interested to know that we have just completed a rather careful determination of the specific heats of calcium chloride brine over a wide range of temperatures and densities, the report of which is now in press. This investigation was undertaken by the Bureau at the request of refrigeration engineers. We will forward you a copy as soon as it appears.

6. I note what you say about the success of the metric system movement in China and sincerely hope that before long the same system will be completely adopted by that country.

7. At the present time we have no need for Invar tubes, but we are nevertheless glad to know that they can be obtained and we will bear that fact in mind.

With many apologies for the delay in answering your letter and assuring you that this will not occur again, I am,

Very sincerely yours,

(Signed) S. W. Stratton
Director