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AMENDING THE ACT TO REDEFINE THE UNITS OF ELECTRICAL AND PHOTOMETRIC MEASUREMENTS

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HEARING BEFORE THE COMMITTEE ON SCIENCE AND ASTRONAUTICS U.S. HOUSE OF REPRESENTATIVES

EIGHTY-EIGHTH CONGRESS

FIRST SESSION

ON

S. 1064

OCTOBER 3, 1963

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[S. 1064, 88th Cong., 1st sess.]

A BILL To amend the Act redefining the units and establishing the standards of electrical and photometric measurements to provide that the candela shall be the unit of luminous intensity

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Act entitled "An Act to redefine the units and establish the standards of electrical and photometric measurements" (Act of July 21, 1950; 64 Stat. 370) is amending by deleting the word "candle" wherever it appears and inserting in lieu thereof the word "candela".

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AMENDING THE ACT TO REDEFINE THE UNITS OF ELECTRICAL AND PHOTOMETRIC MEASUREMENTS

S. 1064

THURSDAY, OCTOBER 3, 1963

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND ASTRONAUTICS,
Washington, D.C.

The committee met at 10 a.m., pursuant to call, in room 214-B, Longworth House Office Building, Hon. George P. Miller (chairman) presiding.

The CHAIRMAN. The committee will come to order. This morning we will take up the Senate-passed bill, S. 1064, which is a bill to amend the act redefining the units and establishing the standards of electrical and photometric measurements to provide that the candela shall be the unit of luminous intensity. A copy of the bill will be inserted (p. III). We have as our witness this morning Dr. R. D. Huntoon.

STATEMENT OF DR. R. D. HUNTOON, DEPUTY DIRECTOR, NATIONAL BUREAU OF STANDARDS

Dr. HUNTOON. Thank you, Chairman Miller.

The CHAIRMAN. Incidentally, to identify Dr. Huntoon first, he is Deputy Director of the National Bureau of Standards.

While I am on this, may I say that I sincerely encourage all of you to visit the National Bureau of Standards. I am sure that you will be well repaid for your effort and it will open up new vistas to you. Go out and see how, today, they use as a unit of exact measure, not a metal rod, but a beam of light. Is that right, Doctor?

Dr. HUNTOON. That is correct, sir.

The CHAIRMAN. Because this is constant. When we talk about this type of measurement we are talking about one-tenth of a second of arc. This is a fine place to see; what is done and what has been done, in the National Bureau of Standards. It's outstanding. It's one of the greatest research institutes in the country and one that gets little or no credit because these people are not singing their own praises. The work they do is for others and many others get the credit.

All right, Doctor, thank you.

Dr. HUNTOON. Thank you, Mr. Chairman, for your very kind words. May I take advantage of that introduction, to say we would consider it an honor and a privilege if members of the committee can

find the time to come out and let us show you in as much breadth or as much detail as you wish, the various activities we are engaged in. I think you will find it most interesting and it will be well worth while.

The CHAIRMAN. Off the record.

(Discussion off the record.)

The CHAIRMAN. Let's get on with our work now.

Dr. HUNTOON. To return to the matter immediately before us, I have a very brief statement for the record. Since it is so brief and essentially says all that is needed, I would like to read that statement.

PURPOSE AND NEED FOR AMENDMENT TO THE ACT ESTABLISHING STANDARDS OF ELECTRICAL AND PHOTOMETRIC MEASUREMENTS

When the act of July 21, 1950 (64 Stat. 370), redefining the units and establishing standards of electrical and photometric measurements was passed, the term "candle" was in general use in this country to designate the unit of luminous intensity. The act therefore designated the candle as the statutory unit for measuring the intensity of light. Since 1950, however, the term "candela" has been increasingly used in place of candle. At the present time the term "candle" is obsolete in international usage. In October 1960, the 11th General Conference of Weights and Measures meeting in Paris adopted the term "candela" as one of the six basic units in the international system of units. Domestically, the Council of the Illuminating Engineers has approved use of the term "candela."

Because the term "candle" has been designated by statute the National Bureau of Standards has, over the past several years, used this term when reporting values of luminous intensity domestically. However, when making such reports abroad the term "candela" has been used, as for example in reports to the International Bureau of Weights and Measures. The Department believes it is desirable under the circumstances to change the statutory designation to accord with international usage in the interest of simplifying and expediting the work of the National Bureau of Standards.

The essence of it is, we want one word changed in the act. Remove "candle" and insert "candela."

Mr. KARTH. Mr. Chairman, do I understand then, Doctor, the word "candela" and "luminous intensity" is the same as "candle"?

Dr. HUNTOON. There is no change in the luminous intensity, sir. It's only the name that we use for the quantity which we wish to change.

Mr. STAEBLER. Mr. Chairman, as a matter of curiosity, what is the origin of the word "candela"?

Dr. HUNTOON. I am afraid I am not in a position to tell you that, sir. I think it's a Latin word for the word "candle."

The CHAIRMAN. I think that is what it is.

Mr. RUMSFELD. Mr. Chairman, I have a question.

Are there other statutes which demand compliance in publications or labels on equipment with the Bureau of Standards designating terms?

In other words, when this is passed, are there other laws which will come into effect and require the immediate changing of a series of publications or all the little metal plates on pieces of equipment?

Dr. HUNTOON. I do not know of any such acts, as you refer to. Obviously, in equipment which is manufactured to read in these units, subsequent manufacturers will, no doubt, mark the dials in terms of "candela."

Mr. RUMSFELD. I appreciate that "subsequent," but I'm talking about existing equipment.

For example, in the Navy they use searchlights and it is calibrated by candlepower there and there are labels on this equipment.

I was just curious to know what the passage of this particular bill would do.

Dr. HUNTOON. Mr. Gordon Christenson, Assistant General Counsel for the Department of Commerce, is our legal adviser. He's been looking through the act as you talk. We find no legal requirement, once this unit is defined, to require marking. It is an international unit and the term is used as stated in our remarks. Of course, if people want to mark things, they can, but there is no legal requirement.

Mr. RUMSFELD. There is no legal requirement.

The CHAIRMAN. I have the statute here. I'd hardly attempt to read it, but it defines the standards of electrical measure. These measurements come under these captions: "resistance-ohm," "current-ampere," "electromotive force and electric potential-volt," "quantity-coulomb," "capacitance-farad," "inductance-henry," "power-watt," "energy-joule," "kilowatt-hour." Then the intensity of light is "candle."

So, in order to change the terminology, we are adopting the word "candela" to be uniform.

One of the things Dr. Weaver and I have discussed in some of the applications of terminology in the field of science—maybe we should try to make it simpler, but it must be uniform if you are going to talk to people in other places.

Mr. RUMSFELD. Right.

The CHAIRMAN. Inasmuch as candela has been adopted by the scientific community in the world, it just leaves us standing alone, if we do not so adopt.

Mr. RUMSFELD. I am in favor of this.

The CHAIRMAN. But you see these people have absolutely no authority in enforcing this. They set the standards. If the Department of Commerce or the Department of Agriculture want to adopt the standards and then do, it's up to them to enforce it and say how it should be done. All these people do is just—set and maintain the standards—this is a purely scientific organization.

Mr. RUMSFELD. Maybe my question was poorly phrased. I understand all of that. My question was, Are there other statutes which, when this is changed, will demand compliance on the part of another Government agency or department with the specific name being used by the Department—Bureau of Standards?

Dr. HUNTOON. We know of none.

Mr. RUMSFELD. And they say they know of none, so I have no further questions.

The CHAIRMAN. Are there any other questions?

Mr. ROUBEUSH. Yes, Mr. Chairman.

Is a motion now in order to report this bill?

The CHAIRMAN. Right.

Mr. ROUBEUSH. I so move.

The CHAIRMAN. Seconded?

Mr. KARTH. Seconded.

The CHAIRMAN. The motion is to report out the bill favorably. That carries with it the instructions of the chairman to take all necessary action to see that the bill is enacted into law.

Are you ready for the question? All those in favor signify "Aye."

COMMITTEE. "Aye."

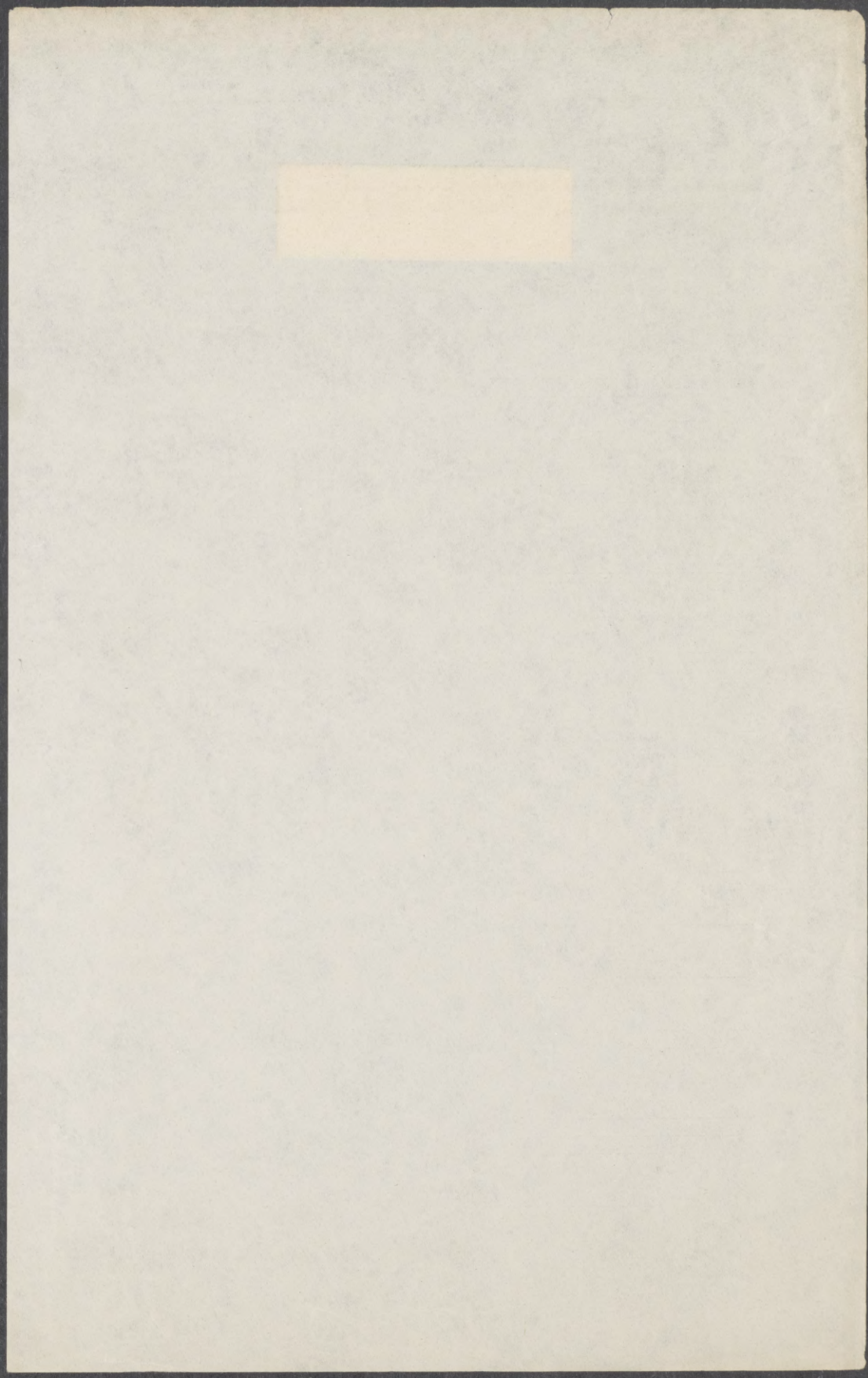
The CHAIRMAN. Contrary "No."

(No response.)

The CHAIRMAN. The "ayes" have it. The bill is reported out unanimously.

(Whereupon at 10:30 a.m., the committee was adjourned.)







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