

DISCUSSION AND CORRESPONDENCE

DID HUMPHRY DAVY MELT ICE BY RUBBING TWO PIECES TOGETHER UNDER THE RECEIVER OF AN AIR PUMP?

It is commonly stated that Humphry Davy melted two pieces of ice by rubbing them together under the exhausted receiver of an air pump, and thus showed conclusively that heat is not a material substance. In books which I happen to have at hand I find twelve different authors stating that Davy melted two pieces of ice by rubbing them together in a vacuum, and four of them stating in addition that the two pieces of ice were rubbed together by clockwork. In looking to see what Davy himself said about this experiment I have, to my surprise, failed to find any evidence that he ever performed just this experiment.

Of the authors whom I consulted, four give references. Two refer to the *Collected Works* of Sir Humphry Davy, vol. 2, p. 11. The other two refer to Davy's *Elements of Chemical Philosophy*. In the *Elements of Chemical Philosophy*, reprinted as Volume 4 of the *Collected Works*, I have not found any statement about the melting of ice by friction. In the first paper in Volume 2 of the *Collected Works* Davy describes twenty-two experiments and makes comments on them.

In Experiment 2, p. 11, he describes an experiment in which "by a peculiar mechanism" he caused two blocks of ice to rub together. "They were almost entirely converted into water." In the description of this experiment nothing is said about any air pump.

The description of the third experiment is not entirely clear. Davy says, "I procured a piece of clock-work so constructed as to be set to work in the exhausted receiver; one of the external wheels of this machine came in contact with a thin metallic plate. A considerable degree of sensible heat was produced by friction between the wheel and plate when the machine worked uninsulated from bodies capable of communicating heat. I next pro-

cured a small piece of ice; round the superior edge of this a small canal was made and filled with water. The machine was placed on the ice, but not in contact with the water. Thus disposed, the whole was placed under the receiver. . . . The receiver was now exhausted. . . . The machine was now set to work. The wax rapidly melting, proved the increase of temperature."

From this description it seems that the clockwork was not a mechanism for rubbing two pieces of ice together, but was used to produce friction between two metals, and that the heat developed by this friction caused the melting of some wax.

Any clockwork which Davy might have placed inside of the receiver would probably not have been sufficiently powerful to melt ice rapidly by rubbing it on ice. I have wondered if some author did not read the second experiment, glance at the third, and seeing the words *clockwork*, *exhausted receiver*, *ice* conclude that two blocks of ice were rubbed together by clockwork under the exhausted receiver. If so, this is an interesting illustration of the ease with which a misstatement may pass from one author to another. If there is evidence that Davy did melt two blocks of ice by causing clockwork to rub them together under the receiver of an air pump I hope some one will adduce it.

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A PARACELSUS LIBRARY IN THIS COUNTRY

IN your issue of February 10, F. N. Garrison announces a new prospective publication in Germany of the complete works of Paracelsus, that great pioneer in analytical chemistry and medical reformer of the sixteenth century. It may not be generally known that what is no doubt the largest and most complete collection of the works of Paracelsus in this country is the one made during the last century by the late Dr. Constantine Hering of Philadelphia, and since his death in 1880 was ac-

quired by the Hahnemann Medical College of Philadelphia, where it is now deposited. He spared no effort or expense to make it as complete as possible.

CARL HERING

THE TEACHING OF EVOLUTION IN THE BAPTIST INSTITUTIONS OF TEXAS

THE teaching of evolution in the Baptist denominational schools in Texas is being investigated as heretical. The denomination is strong in membership and maintains about 15 colleges and seminaries in the state, the chief of which is Baylor University at Waco. It appears that the trouble arose as the result of the publication in 1920, by the Baylor University Press itself, of an "Introduction to the Principles of Sociology," by Grove Samuel Dow, Professor of Sociology in Baylor University. The book is based upon the theory of evolution wherever it touches upon the biological aspects of sociology, although the term biological evolution is scarcely or not at all used in the text. At a recent conference of representatives of the Baptists of all parts of the state, such teachings were pronounced heresy, and a sweeping investigation is being made of all of the Baptist schools of the state to determine how much "heresy" is being taught. Professor Dow has resigned his position.

A somewhat related situation has existed at Southern Methodist University, Dallas, where the teaching of Dr. John A. Rice, Professor of Old Testament Interpretation, has created the severe opposition of a large part of his church. Dr. Rice's book, "The Old Testament in the Life of Today," looks upon the Old Testament as a series of independent historical papers, each subject to its own interpretation. Many are considered as having been revised by several authors before they have reached their present form. Each is regarded as a literary production, subject to all of the rules of literary interpretation; this introduces a personal factor into any understanding of the Old Testament, and completely does away with literal interpretations. Dr. Rice has also left

his position, to become pastor of a Methodist church in another state.

S. A. R.

THE METRIC CAMPAIGN

MR. HALSEY's recent letter in *SCIENCE* is of interest in view of the hearings that have been held during the past few months on the Britten-Ladd Bill. It was made clear in these hearings that wire, for instance, is readily defined as a 2 millimeter wire (2 mm in diameter) or, by a less convenient method, as a wire 0.079 inch in diameter. An inferior method is to refer to such a wire as a No. 46 Stubs' wire (2.01 mm or 0.079 inch) or a No. 14 Birmingham (Stubs') wire (2.11 mm or 0.083 inch). There are at least three other gages that have been used to a greater or less extent. It was shown in the metric hearings that if this convenient metric method continued to prevail, certain gage manufacturers would lose the advertising value connected with the use of their gages. It furthermore developed that it was a gage manufacturer who had organized what opposition he could in order to fight the metric system, had contributed \$1,000 from his firm and had brought about the employment of Mr. Halsey in his metric fight. Mr. Halsey had profited by his anti-metric efforts in the past. His own words in this controversy were "We have killed the metric system before and we will kill it again." We have no objection to Mr. Halsey's attempted slaughter of the metric system. Readers of *SCIENCE*, however, may be unaccustomed to his method of argument. In his recent letter, for instance, he endeavors to make it appear that Professor E. C. Bingham of Lafayette College is "naïve" and ignorant regarding weights and measures, and that therefore he should not be encouraged in the successful campaign to secure the use of metric weights and measures throughout the industry in which he is an expert. Professor Bingham's many friends and acquaintances do not need to be told that he is unusually well informed and proficient in his work.

Mr. Halsey's use of the title "Commissioner" is also of interest. This has led a few people to believe for a time that Mr. Halsey in some