Ames, "Theory of Physics" (1897), page 398: ". . . when the satellite will disappear behind Jupiter, *i. e.*, be eclipsed."

Watson, "A Text-book of Physics" (1899), page 505: ". . . when Jupiter and the earth are nearest together (at conjunction), and that which occurs when they are at their greatest distance (opposition)."

Rowland and Ames, "Elements of Physics" (1900), page 172: ". . . and so, if the eclipses of a satellite behind a planet's disc. . . ."

Eggar, "Wave-motion, Sound, Light" (1901), page 504: ". . . the times of eclipse of one of the moons, *i. e.*, the instants at which it should pass behind the planet and emerge from his shadow."

Crew, "Elements of Physics" (1906), page 311: "Jupiter has five moons, one of which is larger and brighter than any of the others, and is called the 'first satellite.'" See also "General Physics" (1908), page 429.

Henderson and Woodhull, "Elements of Physics" (1906), page 290: "The eclipse was seen while the earth and Jupiter were on the same side of the sun—as the astronomers say, 'in conjunction'—the time was 16′ 36″ earlier than when the earth and Jupiter were on opposite sides of the sun; that is 'in opposition.'"

Millikan and Gale, "A First Course in Physics" (1906), page 388: "Roemer was making observations on the largest and brightest of Jupiter's seven moons." "Roemer first determined the interval between two successive eclipses, . . . and found it to be 48 hr. 28 min. and 36 sec."

Gage, as revised by Goodspeed, "Principles of Physics" (1907), page 276: "He made observations on that one of the five of Jupiter's satellites which is nearest to the planet."

Duff (editor), "A Text-book of Physics" (1908), page 339: ". . . when Jupiter and the earth are in conjunction, or on the same side of the sun and in line with it." ". . . at opposition, when the earth is on the opposite side of the sun from Jupiter."

Leaving out of consideration the number of Jupiter's satellites at any date, each of the above quotations has one error and some of them two. In many books it is stated that Roemer found the time for the light to cross the earth's orbit to be 16 min. 36 sec. This is nearly the present accepted value, while that deduced by Roemer was considerably greater, some 22 min.

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AIR IN THE DEPTHS OF THE OCEAN

To the Editor of Science: With reference to the communications appearing in the issues of August 25 and October 27 in relation to "air in the depths of the ocean," while it is erroneous to hold that the amount of dissolved gas is dependent upon hydrostatic pressure, yet the gas content of the bottom waters may be greater than the gas content of the surface waters because of the greater solubility of the gases at the low temperatures prevailing in the depths of the ocean. Sea water contains, in proportions varying widely with circumstances, four gases—oxygen, nitrogen, carbonic acid and argon. The oxygen decreases and the carbonic acid increases with increasing depth; but there is a respiratory process in operation by which the carbonic acid ascends by diffusion right up to the surface, while the oxygen by the same means makes its way to the bottom. This allows us to understand how the supply of oxygen, which is indispensable to the life of the animals everywhere existing in the depths of the ocean, is renewed even down to the bottom and an exchange made between the carbonic acid gas produced by their respiration and the oxygen coming from above.

G. W. Littlehales

CONTAGIOUS ABORTION OF CATTLE

To the Editor of Science: In a recent number (October 13) Director H. L. Russell, of the Wisconsin Agricultural Experiment Station, announces the discovery of the fact that the contagious abortion of cattle in this country is identical with that of Europe, and due to the *B. abortus* of Bang. Professor Russell apparently regards the investigations carried out at the Wisconsin Station since May, 1911, as the first creditable bacteriological work upon this subject in this country, and his communication would seem to cast some doubt upon the accuracy of the observa-