within the scope of the topic." The sentence astonishes me, and leads me to inquire what was the basis of the opinion; for it does not appear to be in the chapter itself, the arrangement of which is intelligent and intelligible, and certainly not based on mere fortuitous reading. The author of the book, if he has read the review, must, one would think, feel mortified to have such a bald accusation of negligence brought against him: I trust, therefore, that you will publish this letter, to show that at least one worker in this field places a higher value upon his volume than your reviewer does, with his paucity of commendation.

CHARLES SEDGWICK MINOT.

Boston, Mass., Jan. 20.

I am under great obligation to Dr. Minot for the kindness he has done me in calling attention to the injustice of my recent review of Dr. Whitman's book. I am myself astonished at it, and cannot comprehend how I could have made so unfair a statement when I intended no injustice.

I said, "This chapter furnishes much valuable information, but the arrangement leaves the impression that it is the result of fortuitous reading rather than a methodical search for the most valuable things within the scope of the topic"

The sentence as it stands leaves me indorsing what, it occurred to me, might be the inference of one who simply looked at the arrangement of the chapter as made up of the separate consideration of so many isolated animals — e.g., Clepsine, Spirorbis borealis, Myzostoma, Sagitta, etc. — instead of classes of animals. What I should have added was, that such an impression would be entirely misleading. I had not the least idea of making that impression represent my opinion, but quite the reverse, for it was in direct opposition to my positive knowledge; no one, perhaps, realizing better than I that the author's work had been of the most painstaking and discriminating kind. In my estimation, moreover, there was no zoölogist in this country who possessed in so great a degree the experience and the other qualifications necessary to the successful handling of this topic.

As regards the general tone of the criticism, I can only say that the esteem in which I hold the author made me distrustful of my ability to praise his work judiciously, and that in avoiding one extreme I have fallen into the error of the opposite, and appear only to criticise where there is much more that I ought to have praised.

EDWARD L. MARK.

Cambridge, Jan. 25.

Cost of scientific books.

A goodly proportion of the book-notices in your periodical contain a statement to the effect that the publisher has been too profuse in his paper; that he ought to use a poorer and thinner quality, and sell the book at half the price. This betrays a lamentable ignorance on the part of your critics, and, besides, conveys a very erroneous impression. Paper is a very inconsiderable item in the cost of manufacturing a book. It is a good-sized volume which, without the covers, will weigh four pounds, and paper as good as that in most of the books criticised costs only ten cents a pound. The utmost that could be saved by lightening and cheapening would be a third in weight, and two cents a pound in price, thus reducing the cost of the paper of a four-pound book from forty to twenty-four cents, certainly not enough reduction to allow the price of the book to be reduced from four to two dollars.

The cost of the plates is the greatest item in the production of a book, and the ruling price for this work is eighty cents per thousand 'ems' (a page of Packard's 'Zoölogy' contains about a thousand 'ems'). Then all the cost of corrections, other than mere typographical errors, and the cost of making up the pages and inserting the cuts, are all charged as time-work. The cost of corrections in scientific work is enormous, and I have known it to amount to one and a half times the original cost of composition. A fair average for the plates for a book with the same page and type as that of Packard's 'Zoölogy' would be a dollar and a half a page. This must be considered in settling the price of a book.

Finally, the sale of strictly technical books is very limited. An edition of five hundred is a good average; and, were the price reduced to half the ruling price, the sales would not be increased ten per cent. As it is, they little more than repay the cost of publication, and the reduction so earnestly and ignorantly prayed for by your critics would involve the publisher in a considerable pecuniary loss on every strictly scientific book issued; and a few failures of that sort would make them refuse all scientific books.

I do not wish to be understood as defending the prices put on all publications; for some the charge is clearly extortionate: but, so far as I at present recall, not one of those thus criticised in your columns has a price higher than was necessary to reimburse the publisher for his outlay, and pay him a fair amount for his labor in publishing, advertising, and selling the work. I hope in future your critics will omit any reference to this feature in their fault-finding.

J. S. KINGSLEY.

Malden, Mass., Jan. 19.

Oil on troubled waters.

I feel that I must offer a few words of rejoinder to your comments on my letter of Jan. 18, because I cannot admit that there is any grave responsibility involved in my inquiring for the proofs of an alleged scientific theory, or any lack of feeling implied in my protesting against a disposition to hold out a misleading hope to 'the toilers of the sea.'

I have not tried to throw discredit on any well-directed effort to render less dangerous the hazardous vocation of the sailor: I have simply attempted to raise a note of caution against false inductions and specious generalizations. I look upon this as a question of science, not of sentiment; and I have been accustomed to regard science as a matter of hard, clear facts, and keen, cold logic.

It may possibly be that the hydrographic office is affording substantial comfort to the mariner's generally cheerless lite by disseminating the fables and traditions of the sea; but, if so, it is a purely literary undertaking, not a scientific one. It may while away an otherwise tedious hour or two on shipboard to read, in effect, that a half-barrel of oil sprinkled over the entire course between New York and Liverpool will insure a safe voyage at any time and in any weather; or that a half-gallon, poured upon oakum, tied tight in a bag, and towed at the stern of a vessel, will reduce the mountainous billows, ease the strained sails and cordage, brace the bending spars and timbers, and bring welcome, peace, and quiet where all before was wild confusion and danger.

But, to a cool-headed landsman, this will appear so astoundingly incredible, that nothing short of the most searching scientific investigation and rigid experiment can give it even a tinge of probability. Either this apparently transcendent miracle is capable of a rational explanation and demonstration, or it is a myth and a delusion. To my mind, the use of the oil-bag upon the ocean is strongly suggestive of the idea of applying a liver-pad to a cyclone.

It is of no avail to quote Pliny or other mere chroniclers, ancient or modern, or to pile up the inexact and awe-inspired tales of seafaring men. I admit that the history of the notion is interesting, like the history of the acceptance of any other prodigy; but there is a wide difference between the progress and persistence of a belief and its scientific truthfulness.

Now, I do not pretend to have seen all the evidence which the hydrographic office has collected or published on this subject, and I shall not undertake to say that relatively large masses of oil, spread upon comparatively small bodies of water, may not, under some circumstances, modify or prevent the formation of waves. But that oil filtered into the raging and turbulent deep at the rate of a quart per hour, — or even a gallon per hour, as reported in the letter printed by you last week, — should prove to be an adequate cause for the marvellous effects attributed to it, is, to me at least, a thing utterly and absolutely inconceivable; and I confess to a disturbance of my faith in any institution that gives such stories credence or currency. C. F. Cox.

New York, Jan. 24.

The collapse of the theosophists.

Permit me to take exception to the article entitled 'The collapse of the theosophists' in your issue of yesterday.

I have no contention with any statement, correct or otherwise, which the article contains, and offer no argument *pro* or *con;* but I beg to be allowed to use this occasion to protest against and to obviate the prevalent misconception that 'Blavatsky' and 'theosophy' are synonymous terms, or that either the manners or morals of any individual theosophist necessarily represent the methods, objects, and purposes of the theosophical society.

In my judgment, the 'collapse of the theosophists' is a prediction much safer to make after than before the event; there being, to my knowledge, no organized body of psychical researchers in the world less likely to verify any such prophecy.

ELLIOTT COUES, F.T.S.,
President Gnostic branch, T.S.,
President Amer. B. of C., T.S.,
Member Exec. C. of India.

Washington, D.C., Jan. 23.

Nectar-secreting plant-lice.

Oregon is the place for nectar-secreting plant-lice. During the past fall I received twigs of spruce and willow from that state, which, though not more than six inches long, contained at least a tablespoonful of crystallized sugar, which was both pleasant and sweet. This insect is a species of Aphis, and though possibly not equal to the bee, or to the manufacturer of our best cane-sugar, in her power to form an excellent article of sugar does surpass greatly the glucose factories in the quality of the product which she turns out. A. J. COOK.

Sea-level and ocean-currents.

The value of the conclusions arrived at by Professor Ferrel in his article in *Science*, No. 155, headed 'Sea-level and ocean-currents,' depends largely upon a statement made by him; viz., "The recent important determination of the coast and geodetic survey by levelling up the Mississippi valley and across to the Atlantic coast, that the mean level of the Gulf of Mexico at the mouth of the Mississippi is about one metre higher than that of New York harbor."

An item so important in ocean dynamics for comparison of facts with theories should be known to be most unquestionably correct. I am not aware of any official publication of the coast and geodetic survey to which the above statement could be credited, and, what is more, such a line of spirit-levels has never, to this day, been executed by the survey. Probably a paper read before the American association at the Philadelphia meeting in September, 1884, gave rise to the supposed fact. On p. 446 (vol. ii.) of its Proceedings, we find, "Height of bench-mark at St. Louis above mean tide at Sandy Hook 3 feet" (*sic*), and, "Precise line of levels from Gulf, by Mississippi River commission, along the river, shows an elevation of the Gulf of Mexico, near the mouth of the Mississippi above mean tide at Sandy Hook, of about 40 inches." Here the responsibility is placed on the commission.

By permission of the superintendent of the survey, I make the following extract from a report by me, dated May 24, 1883: —

	Metres.
1. Height of coast and geodetic survey bench-mark at the St. Louis bridge above the average or half-tide level of the Atlantic at Sandy Hook, N.J., as ascertained from six years of tidal observations.	126.91
2. This bench-mark was placed at the same level as the so-called St. Louis city 'directrix.'	
3. From precise levels executed by the Mississippi River commission and the U. S. lake survey, St. Louis city directrix above the Greenville, Miss., bench-mark (on bank building), according to letter from commission dated May 18, 1883.....	86.185
4. By coast and geodetic survey levels, Greenville bench-mark above the Hampson bench-mark at Carrollton, La.....	37.267
5. From Humphreys and Abbot's work on the Mississippi River (1861), p. 110, it appears that the Hampson mark is 8.06 feet or..... above the level of Lake Pontchartrain, which is said to be at the same level as Lake Borgne and Bayou St. Philip, and hence with that of the Gulf.	2.456

Putting these figures together, it would appear that the Gulf level is about one metre above the level of the Atlantic at New York. The report further comments on this result: "While there is nothing impossible in this result, the difference is greater than I [the present writer] expected from the conditions of the case, but it may possibly be greatly reduced when precise data come to hand; and, in particular, more evidence is desirable as to the connection of the Hampson mark with the average Gulf level. We have no checks at present."

It is evident that no probable error can be assigned to the alleged difference, and that the amount itself is greatly in need of confirmation, which it is hoped will soon be reached through the direct line of levels started by the coast and geodetic survey to run from its Illinois line to the shore of the Mississippi Sound.

C. A. S.