Yeo's small work fulfils the requirements of a satisfactory book on the subject. It will be found useful for reference by the busy practitioner, and it contains numerous facts, as a rule clearly stated; and it will perhaps also be found acceptable to the lay public, as, in many parts, the style is more or less popular. The chemistry of food-stuffs is not treated as accurately as it might be. Thus we have "syntonin or muscle fibrin; myosin, from muscle," placed in separate lines as food-stuffs. In the table (p. 10), "casein" (probably a misprint for ossein) is placed under "gelatigenous substances"; and gelatin is itself considered a "gelatigenous" substance. This, it must be confessed, is a somewhat loose way of describing these substances.

Dr. Yeo makes the statement (p. 16) that albumen, together with water and salts, is able "alone to support the vital processes," and can "replace in nutrition the fats and carbohydrates." With this statement most physiologists would disagree. Several more instances of somewhat vague statements might be quoted from the work. Milk is considered by all classical writers on the subject a complete or perfect food; but Dr. Burney Yeo goes further than this, and classes eggs as "the only other complete food afforded by the animal kingdom" (p. 51): "but when regarded in the light of a complete food, the shell must be taken into account" (p. 69). In a second edition of the work, the physiological and chemical portion wants careful revision.

In the discussion of the diet in disease, Dr. Yeo is more at home; and he has set forth the various modes of dietetic treatment of disease in a clear manner. The only fault to be found with this part of the book is that the style is somewhat too diffuse to be of great service to the general practitioner, for whose use the work is evidently chiefly intended. Although we have criticized the loose physiological and chemical statements in Dr. Yeo's work (some of which have been quoted), yet the book will no doubt be found useful by many.

Fifth and Sixth Annual Reports of the Bureau of Ethnology to the Secretary of the Smithsonian Institution. By J. W. Powell, Director. (Washington: Government Printing Office, 1887–88.)

THESE Reports, each of which is presented in a large, well-printed volume, contain the record of much solid and useful work. The first of them—the Report for 1883–84—includes an elaborate paper, by Prof. Cyrus Thomas, on burial-mounds of the northern sections of the United States. This is followed by an essay in which Mr. Charles C. Royce tells the story of the official relations of the Cherokee nation of Indians with the Colonial and Federal Governments of North America. In the third paper, Dr. W. Matthews gives an account of what Prof. Powell describes as one of the most illustrative ceremonies of the Navajo, a tribe formerly widely diffused, and now settled in parts of New Mexico and Arizona. Dr. Clay MacCauley deals with the Seminole Indians of Florida, and Mrs. Tilly E. Stevenson gives a vivid picture of the religious life of the Zuñi child. Of the papers associated with the Report for 1884–85, the first is on the ancient art of the province of Chiriqui, Colombia, by Mr. William H. Holmes. To this excellent paper we have already called attention. It is followed by another, by the same author, on textile art in its relation to the development of form and ornament. Dr. Franz Boas contributes to the volume an instructive and well-arranged paper, in which he sets forth the results of his observation and study of the central Eskimo. Prof. Cyrus Thomas gives some aids to the study of the Maya codices, and Mr. J. Owen Dorsey brings together interesting versions of two Osage traditions. These versions are printed in the original language, with an interlinear and a free translation of each, and with explanatory remarks.

Light, Heat, and Sound. By Chas. H. Draper, B.A. D.Sc. (Lond.). (London: Blackie and Son, 1890.)

THE syllabus of contents of this little work is that of the elementary stage of the Science and Art Department, some additions being made in the sections on light and Heat in order to bring them up to the standard of the London University matriculation paper. Viewed as an examinational text-book, there is much that is meritorious in the arrangement and general character of the work, the information being conveyed in the disintegrated fashion now so common. We would, however, point out to Dr. Draper that hoar-frost is not frozen dew, but water deposited in the solid form, and that hail is not simply rain-drops frozen as they fall through a cold stratum of air. The questions placed as exercises at the end of the chapters have been selected from papers set at the above examinations, and will serve not only as a test of the student's progress, but as a branch of his mental education worth cultivating.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Bourdon Gauge.

ALLOW me to suggest to such of your readers as are interested in this subject the following experiment. Cut out of cardboard two annular strips, each of somewhat more than a quadrant, the inner radius being say 7 inches, and the outer radius 9 inches. Along the middle of each strip—that is, along the circle of 8 inches radius—cut the boards half through, so as to render them flexible, and then join the two strips together with gum paper at the inner and outer edges. In this way we obtain a curved tube whose section is a rhombus, and whose curvature is connected with the magnitudes of the angle of the rhombus. The manipulation of such a tube gives definiteness to one's ideas, and enables one to recognize that internal pressure, tending to augment the included volume, and therefore to make the section square, must also cause the curvature of the axis to approach a definite associated value. In this case the deformations are practically by bending, principally, indeed, at the hinges; and I cannot doubt that in its main features the mechanism of an ordinary Bourdon gauge may be looked at in the same light.

RAYLEIGH.

The Optics of the Lightning Flash.

IN the extract from Mr. Shelford Bidwell's recent lecture on "Lightning" at the London Institution, which appeared in your issue of June 12 (p. 151), I notice the author says that the lightning flash of artists has no existence in nature, and that it is an artistic fiction or symbol. May I venture to trespass on your valuable space to refer to a paper which I had the honour of reading before the Royal Meteorological Society (published in the current Quarterly Journal of the Society) only a few days after the delivery of Mr. Shelford Bidwell's lecture? In this paper I endeavoured to show how the "zigzag" flash so often seen by observers, and frequently depicted by artists, may have its counterpart in nature, quite consistently with the evidence of the photographs of lightning flashes collected by the Royal Meteorological Society.

I suggested that such an appearance is not the flash itself, but the optically projected image of the flash formed on clouds, not of a smooth surface, but of the rocky cumulus type. The image of the flash takes the angles of the uneven surface and becomes zigzagged. I showed how this might be by casting the photograph of a lightning flash—the "streaming" flash—by means of the optical lantern, on model cumulus clouds, made of cotton wool. The "streaming" flash became distorted, and in fact zigzagged, so that it could not have been recognized as the type mentioned.

"Projection" lightning flashes surely must happen in nature, and might be accounted for in more ways than one. I will