distribution is obtained. Another good point is that each of the great divisions of the earth's surface is shown in its relation to the whole; in other words, the earth is the unit throughout the book. But it is in the matter of illustrations that the work excels all others of its kind. The hundreds of pictures and maps are really works of art, and the author does not claim too much when he expresses the thought that they are superior to those in any similar school book. They are true to nature, most of them having been engraved from photographs; they well illustrate and supplement the text, and they present typical forms. Only in two or three cases can any fault be found. In some of the relief maps showing hemispheres of the earth, the parts of continents extending beyond the hemispheres are, as it were, lifted from the other side, and drawn in outside the containing circle. We are sure that this will lead to misconception, for children will get the idea that the continents are surfaces lying on the earth instead of portions of the earth itself above sea-level. But this is a small matter, and one easily remedied. The book is both attractive and instructive; it reflects great credit upon the author for his originality, and upon the publishers for their enterprise. We should be glad to see a similar work produced on this side of the Atlantic.

Theoretical Mechanics. Vol. i., *Solids.* Vol. ii., *Fluids.*
By J. Edward Taylor, M.A., B.Sc. (London: Longmans, Green, and Co., 1894.)

WHEN Solomon delivered himself of the sage remark that "there is no new thing under the sun," his prophetic eye may have been looking up the corridors of time, and seen the "soul-destroying text-books" (as Dr. Armstrong terms examination literature) of the present day. It is only rarely that a text-book writer goes beyond his brief. He designs his book to meet the requirements of a particular examination, and feels that he has performed his task successfully if future questions set by the examiners are more or less anticipated in the text. Such a writer has little scope for originality. If he departs much from the lines laid down in the examiners' syllabuses, his production fails in its object, and if he keeps the contents within the examiners' bounds, he incurs the censure of the reviewer. Thus it is that text-books are often mere summaries, and that there is a family likeness between those covering the same ground.

The volumes which Mr. Taylor has put together cannot, by the greatest stretch of imagination, be termed interesting. They are little more than collections of exercises and examples. We do not, however, raise any objection to this. Theoretical mechanics, like arithmetic, can only be learned by steadily working at exercises, and of these there is an abundance. The examples are also numerous, and they are so clear that the most obtuse student cannot fail to understand them. There is nothing remarkable about the illustrations except their familiarity. Most of them are very old, and many have done duty time after time.

The Animal as a Machine and a Prime Motor, and the Laws of Energetics. By R. H. Thurston. Pp. 97. (New York: John Wiley and Sons. London: Kegan Paul and Co., 1894.)

PROF. THURSTON, the head of Sibley College, Cornell University, ranks very high among American engineers. He is well known as the author of several widely-used text-books and of numerous important papers on engineering matters. The volume just published runs into less than one hundred pages; but in that space, energy and its transformations, and the relations between matter, force, and energy are skilfully described. The chapter which deals with the animal as a prime motor will be found attractive from many points of view, and should be

read by all who have to do with the muscular work of men and animals. Among the many matters with which it is concerned are the processes of vital machines, the efficiency of the animal system, effective methods of application of power, intensity of muscular effort, dietaries, and the draught of vehicles. To a large extent the book is made up of reprints from magazines, and selections from various works; nevertheless, it contains many original and valuable points, and will add to the author's already high reputation.

The Aborigines of Western Australia. By Albert F. Calvert. Pp. 55. (London: Simpkin, Marshall, Hamilton, Kent, and Co., 1894.)

CAPTAIN WILLIAM DAMPIER, the first Englishman known to have made the acquaintance of the Australian natives, referred to them as "The poor winking people of New Holland . . . the miserablest people in the world." Mr. Calvert, who has had a little experience with the natives, looks upon their imperfections with a more lenient eye than the plain-spoken buccaneer, who visited Western Australia in 1688. He gives descriptions of a few of their habits and rites, the information being drawn in some cases from journals in the British Museum, while in others it is based upon his own recollections. Their marriage laws are curious. Children of either sex always take their mother's family name, but a man may not marry a woman of his own family name. Interesting descriptions are given of aboriginal funeral ceremonies, and these, with one or two other matters of interest to anthropologists, render the book worth reading, if a little discretion is used.

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.]

A Remarkable Meteor.

THE course of the meteor of August 26 can only be ascertained by comparing observations from different points of view. If the meteor fell near Gloucester, other observers to the north, east, or west of that city will have seen it in a part of the heavens far removed from Draco and Ursa Major.

I was at Wimborne (about 75 miles south of Gloucester) on the 26th ult., and, as I was gazing up to the zenith at the time

This figure accompanied Mr. Earle's letter last week. To it a x has been added to show the position of nebulous remains of meteor as seen from Wimborne.

the meteor fell, I missed its descent, but attracted by the vivid glow, I was just in time to catch sight of a brilliant light, which seemed to me two or three times as bright as Venus at its brightest. Any elongated trail disappeared quickly, but a

nebular light remained at the lowest point reached by the meteor, which assumed a vague oval shape and imperceptibly faded away. For four minutes the nebular light was easily watched; then I ceased to note the time, and after two or three minutes more I failed to distinguish it.

The position of the nebulous remains of the meteor appeared to me vertically beneath β Ursæ Majoris, at a distance from it rather more than one-third the distance of α from β . I did not notice any motion, but if the apparent upward movement of the nebulous light were due to a north-north-west current of air drifting the light incandescent ash of the meteor to the south-south-west, the motion would be imperceptible to a distant observer who was nearly in the same line up or down the direction of the wind.

EDWARD F. LINTON.

Bournemouth, September 8.

IN case it may prove of interest, I write to say that I noticed the meteor mentioned in your last number by Mr. John Earle, as having been seen on the night of August 26. I was walking in the country that evening, and not long after 10 p.m. I saw the landscape lighted up as by a vivid flash of lightning from behind me—my back being towards the north at the time. On turning round, I just caught sight of the meteor as it disappeared, leaving a bright track behind it, about two degrees of arc in length. This track, as seen from where I stood, lay half-way, or nearly so, between the last star in the tail of Ursa Major and Alpha Canum Venaticorum, and in a line connecting the above two stars. It lasted several minutes, as far as I could judge, gradually fading away, and curled up at the lower end, after the manner described by Mr. Earle; but I did not detect any change of position. It seemed to remain about half-way between the end of the tail of Ursa Major and Alpha Canum Venaticorum all the time it was visible to me. I regret that, not having matches with me, I was unable to read my watch and take the exact time of the phenomenon.

T. B. CARTWRIGHT.

Brackley House, Brackley, September 7.

THE meteor of August 26, referred to by Mr. Earle, was seen at Northwich by me, and noted as remarkable owing to the long continuance of the brilliant light in the sky. We had had thunder and lightning in the afternoon, but the clouds had cleared away, and the stars were visible through a faint haze. On entering my garden shortly after 10 p.m., I saw a most brilliant flash of what I took to be lightning. Not hearing any thunder, I looked to see from whence the flash had proceeded. I then saw, almost in the zenith, but a little to the west, a brilliant streak of light. This remained nearly stationary for perhaps half a minute, and then one end bent till the light assumed the shape of the letter J, or, according to a note made at the time, the shape of a hockey stick. Whilst this was taking place there was a manifest movement of the whole, as I thought, towards the west. In the space of two or three minutes the light faded away. The whole time, from the brilliant flash till the fading away of the phosphorescent light, could not have been more than three minutes. Perhaps the slight haze hid the light here sooner than at Gloucester.

Northwich, September 9.

THOS. WARD.

Drought at Antigua.

[MR. THISLTON-DYER has kindly sent us the following interesting note received by him from the Superintendent of Agriculture, St. John's, Antigua.—ED. NATURE.]

We are suffering from a terrible drought here. I thought you might like to look at the accompanying average prepared for H.E. the Administrator. The *Bryophyllum calycinum* weeds are drying up, and in some parts the *Opuntias* are dying! No single fall of under 1 inch is of any use to us.

Jan. Feb. March. April. May. June. July.

1891 ... 3.74 ... 2.24 ... 0.33 ... 2.82 ... 1.87 ... 4.02 ... 10.04 ... =25.05
1892 ... 5.81 ... 0.83 ... 0.88 ... 1.18 ... 2.39 ... 3.28 ... 3.15 ... =17.72
1893 ... 1.77 ... 1.48 ... 2.64 ... 2.14 ... 2.02 ... 2.19 ... 4.63 ... =16.87
1894 ... 2.02 ... 1.06 ... 1.31 ... 2.84 ... 2.86 ... 1.54 ... 1.73 ... =13.36

in.

NOTE.—1891 was a fair year with annual fall 3.83 over that for last 20 yrs.

1892 " very dry " " 7.24 below " "

1893 " " " " 6.73 " " "

1894 promises to be worse than any

Antigua, West Indies, August 13.

C. A. BARBER.

NO. 1298, VOL. 50]

On Spring Rains in Geneva.

THE variation of rain at Geneva Observatory in spring (March to May), through a long series of years, appears to have been subject to a certain periodicity, to which it might be well to draw attention, even if its (considerable) similarity to that of the sun-spot curve should prove to be merely of a fortuitous nature. In the accompanying diagram, I have dealt with both rainfall and rain days (rain hours would have been better than rain days, but these extend back only to 1861). The dotted-line curve shows the actual variation in the annual number of rain days, and the continuous curve with it is the result of smoothing with averages of five. Above is a similarly smoothed curve of the spring rainfall, which is very similar (the actual variations are not given). Below is the *inverted* sun-spot curve.

The letters a, b, c, connect the curves with their respective vertical scales on the left. It will be seen that, the sun-spot minima occurring in 1843, 1856, 1867, 1878, and 1889, we have in the smoothed rain curves, maxima in 1847 or 1848 (but note that the curves rise nearly as high in 1844), in 1857, in 1867, in 1878, and in 1889. In the case of the sun-spot maxima (the earlier at least) there seems to be more "lag."

It would be interesting to know what happens in other parts of Europe in this respect. The Paris curve is, I think, like the Geneva one; but Bremen and Berlin present some important differences.

A. B. M.

Interesting Marine Animals.

Two rare and interesting animals, which we have had alive and under observation for a week past in the aquarium of the Port Erin Biological Station, are probably worthy of record in the pages of NATURE. The one is the yellow variety (?) of *Sarcodictyon* (*Rhizoxenia*) *catenata*. This was first found by Forbes and Goodsir in the Hebrides, and has been described since by myself from specimens dredged in Loch Fyne in 1883. We have now found it here, off the west side of the Calf Island, in 25 fathoms, and have at present several colonies alive with the polypes expanded. The commoner red form of *Sarcodictyon* is rarely seen expanded, and I do not know that the yellow one has ever been seen in this condition. The polypes are of a beautiful transparent white, and glisten in the light like frosted silver.

The other interesting animal is the Polynoid worm *Panthalis oerstedi*. We dredge in the deep water near here large muddy sausage-like tubes, which sometimes contain *Panthalis*, but are frequently empty. Some doubt has been felt, however, as to whether the *Panthalis* really builds the tubes, and it is therefore satisfactory to have had the matter definitely settled by the formation of a new tube before our eyes by a living *Panthalis* in the aquarium during the last few days. Mr. Arnold Watson, of Sheffield, who has been studying the formation of Polychæte tubes for some years, after examining our preserved specimens, became anxious to settle the *Panthalis* question, and came here on my suggestion to get living material. I was fortunately able to take a steamer to the ground on the 25th inst., and amongst the tubes brought up in the dredge, from over 50 fathoms, one