

usefully employ their leisure, by contributing to geological literature, and we heartily wish him success in his work.

*Ensayo sobre una nueva enfermedad del Olivo.* Por Don Pablo Colvée. Publicado en la Gaceta Agrícola del Ministerio de Fomento. Pp. 43, pl. i-ii. (Madrid, 1880.)

It appears that the Spanish olive crop is being jeopardised in the neighbourhood of Valencia by an insect of the family *Coccidae*, distinct from *Lecanium oleæ*, already known as attacking the olive, and considered by Don Pablo Colvée to be a new species of the genus *Aspidiotus*, which he describes as *A. oleæ*. It apparently attacks the tree generally, but especially the fruit, causing the full development of the latter to be arrested. The greater part of Don Colvée's paper is occupied by considerations on the development of insects in general, and on those attacking the olive in particular. The author appears to suggest no special remedy, but judiciously invites investigations as to whether the attacks of the insect are the primary cause of the want of health in the trees, or whether the latter does not invite the attacks.

#### 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. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

#### Winter "Swallows"

SOME months ago I tried to investigate, so far as possible, the many recorded occurrences of swallows in this country in winter. As might be expected, a large proportion of them broke down on inquiry, but there was one which, for several reasons, I thought might be safely trusted. It appeared in the "Remarks on the Weather during the Quarter ending 31st of March, 1864" (p. 5), appended to the Registrar-General's Report for that period, and stands thus:—

"Swallows were seen on January 22d, three miles south of Grantham."

Through the kindness of Mr. Glaisher, F.R.S., and of Mr. Jeans of Grantham, I was at last put into communication with the original circulator of the statement, who obligingly wrote to me (omitting names) as follows:—

— Grantham, Sept. 23d, 1879

"SIR,—The information given to ——— respecting the swallows, I discovered some time afterwards was not correct; what was taken to be swallows were the common bat. I much regret being instrumental in incorrect statements being published; it was an Irishman in my employ who told me of them; he some time afterwards showed me what he supposed to be swallows.

"I remain, sir,

"Your obedient servant,  
" ——— "

I leave to others the moral that may be drawn from the above.

ALFRED NEWTON

Magdalene College, Cambridge, May 9

#### Does Chlorophyll Decompose Carbonic Acid?

I HAVE read with much interest in NATURE, vol. xxi. p. 557, Prof. Lankester's remarks on the question—Does Chlorophyll decompose Carbonic Acid? and having many years ago made experiments on that and kindred topics, should be much obliged if you will do me the favour to reprint the following extract from a paper I published in the *Philosophical Magazine* (December, 1872, p. 425, &c.). This is also in my scientific memoirs, p. 409, 410.

"The decomposition of carbonic acid by plants is undoubtedly the most important of all actino-chemical facts. The existence of the vegetable world, and, indeed, it may be said, the existence

of all living things, depends upon it. I first effected this decomposition on the solar spectrum, as may be found in a memoir in the *Philosophical Magazine* (September, 1843). The results ascertained by me at that time from the direct spectrum experiment, that the decomposition of carbonic acid is effected by the less, not by the more refrangible rays, have been confirmed by all recent experimenters, who differ only as regards the exact position of the maximum. In the discussions that have arisen, this decomposition has often been incorrectly referred to the green parts of plants. Plants which have been caused to germinate and grow to a certain stage in darkness are etiolated, yet these, when brought into the sunlight, decompose carbonic acid, and then turn green. The chlorophyll thus produced is the effect of the decomposition, not its cause. Facts derived from the visible absorptive action of chlorophyll do not necessarily apply to the decomposition of carbonic acid. The curve of the production of chlorophyll, the curve of the destruction of chlorophyll, the curve of the visible absorption of chlorophyll, and the curve of the decomposition of carbonic acid are not all necessarily coincident. To confound them together, as is too frequently done, is to be led to incorrect conclusions."

Nothing can act before it exists, nothing can originate itself. Chlorophyll is therefore the result, not the cause, of the decomposition. Its continual increase during the life of a plant is an effect of the same kind. The force decomposing carbonic acid does not reside in chlorophyll, but elsewhere in the structure of the leaf.

JOHN WILLIAM DRAPER

University, New York, April 28

#### On a Point Relating to Brain Dynamics

ANY attempt to grapple with the doctrine of Free Will *v.* Necessity on the old lines would probably (and deservedly so) not attract much attention. The object of this paper is to place a consideration of extreme simplicity under critical notice, which would seem to be capable of affording a key to the complete reconciliation of the divergent views on a common basis; and since the matter to be dealt with will be strictly within the domain of natural science, a clear analysis will be rendered possible.

It is well known that the only attempt to harmonise the doctrine of Free Will with the principle of the Conservation of Energy consists in supposing that living creatures have a power, by the mere exercise of their "will," of deflecting particles of matter within their bodies from their natural paths, without thereby altering the total energy of the particles.<sup>1</sup> This, therefore, it will be observed in the first instance, assumes a peculiar physical state of things to exist within the body of an animal which does not prevail elsewhere, or it supposes that the laws of nature have not a general application, but that the animal world must be made an exception. This at the very outset evidently involves a very questionable admission. My purpose is simply to point out that by taking into account a special consideration based on the evidence of modern physiology as to the functions of the brain, such an assumption as the above is rendered entirely superfluous, and that even if it could be supported it would still miss the main object in view.

Whatever room for speculation there may be as to the exact nature of the mental faculties, it is at least very generally admitted that these faculties are most intimately connected with or dependent on brain structure. Modern physiological research has at least placed this fact beyond question, or it is allowed that the mental faculties have at all events a *physical side*. From this it must follow therefore that what we call "identity," character, or individuality (as involved in "mind") must be dependent on the special structure of the brain; indeed this view is so widely prevalent that it becomes almost superfluous to insist upon it. Now it may be safely assumed that no upholder of Free Will would wish for more than that a person should act in strict accordance with his identity or individuality, for the object of Free Will certainly is not to annihilate individuality (or those personal traits which constitute character). But is not this precisely what would occur if this contention for a mysterious power of deflecting particles within the body could be carried out? for the effect of this contention would be to make the brain superfluous as a directing mechanism, which would be tantamount to abolishing it (together with the individuality, of

<sup>1</sup> The necessity for this special assumption, in order to prevent Free Will from coming into direct collision with the principle of the Conservation of Energy, is so obvious that it will probably be regarded as superfluous to give references to particular authors.