

way, but when the track is once blazed it is easy enough to follow and find the path.

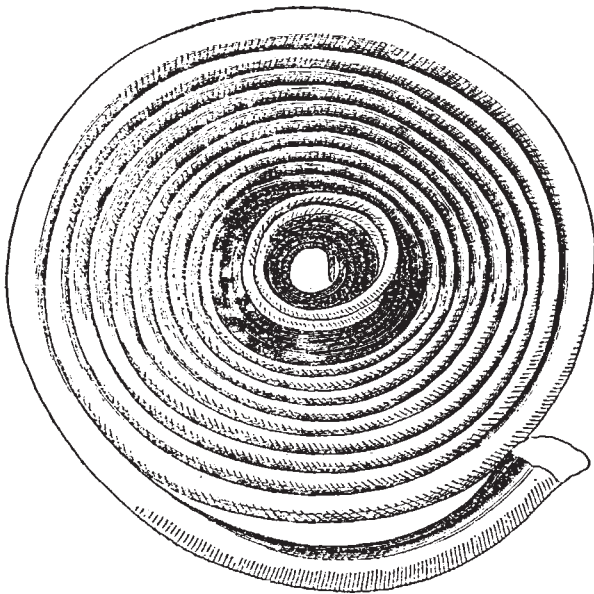
As I do not wish to fill the pages of this journal with personal explanations, my contributions in NATURE to this subject must cease with this note. It is not my purpose at present to refute the imputations cast upon Agassiz by the editors of Forbes's Life and Letters; he can well afford to pass them over as he has done thus far, in silent contempt, the more so since, fortunately for Agassiz, the editors have given us from Forbes's own letters all that was necessary to show a course of duplicity, on Forbes's part, towards the man with whom "he served his apprenticeship in glacier observation," which is happily rare among scientific men. ALEXANDER AGASSIZ

#### Probosces capable of sucking the Nectar of *Anagræcum sesquipedale*

MR. W. A. FORBES, in the number for June 12 started the question, whether moths are known to inhabit Madagascar with probosces capable of such an expansion, as to obtain the last drops of the nectar secreted in the lower part of the whip-like nectaries of *Anagræcum sesquipedale*.

As long as a direct answer to this question has not been given, it may be of some interest to state in general the existence of moths provided with probosces sufficiently long for the honey-spurs in question.

Some days ago I received a letter from my brother, Fritz Müller (Itajahy, Prov. St. Catharina, Brazil), in which he says: "I recently caught a Sphinx (not determinable by Burmeister's "Brazilian Sphingide"), the proboscis of which has a length of about 0.25 metres—a length not approached by any honey-tube of this country known to me. I enclose the proboscis." Being unable to get the name of this species of Sphinx, I append the illustration of its proboscis, magnified in the proportion 7 : 1.



This proboscis, in its contorted condition forming a roll of 10-11 millimetres in diameter, and showing at least 20 elegant windings, in its expanded condition attains a length of between 10 and 11 inches, and would consequently be adapted to the nectaries of *Anagræcum sesquipedale*, which have been found by Darwin 11½ inches long, with only the lower inch and a half filled with nectar. Darwin indeed says, with regard to the fertilization of *Anagræcum sesquipedale* (p. 198 of his work on Orchids): "there must be moths with probosces capable of extension to a length of between 10 and 11 inches." Lippstadt, July 1 HERMANN MÜLLER

#### An Order of Merit

YOUR leading article in the last number of NATURE on the subject of a proposed "Order of Merit for Scientific Men," recalls the views (in exact correspondence with your own) entertained by my brother-in-law, the late J. Beete Jukes. These were expressed by him in no uncertain terms on the occasion of

publishing an address on the Geological Survey, delivered in Dublin in 1863.

I take the liberty of sending you a print for your perusal, and to refer to note B, at p. 21. I was glad to see the subject so well dealt with in your article. ALF. H. BROWNE

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"Men of science have of late years pandered too much to the utilitarian quackery of the age, and it is time that some one should stand up to protest against it. Government and the House of Commons should be told that Science must be supported and encouraged for her own purely abstract purposes, independently of all utilitarian applications. The necessary preliminary, indeed, to these utilitarian applications is the discovery and establishment of abstract scientific truth by men who look to that alone, and whose whole faculties and lives are devoted to it. The men who afterwards make the practical applications of it often attain, indeed, far wider reputations than the real men of science, and become to the popular gaze the representatives of Science itself. The higher class are rarely much known to the public during their lives, and are not usually men who would experience any satisfaction if they were nick-named Knights or labelled with C.B., or would feel inclined to accept any other crumbs that might fall from the table of the politically great and powerful. Nor would they commonly care much for pecuniary rewards, unless as a means to enable them to do their work without drudging for the support of themselves or their families. They are the men, however, who in the end rule the world, and doubtless they are often sustained in their labours by a consciousness of this fact.

"It would manifestly conduce to the public good and the national honour if such men, when they do arise amongst us, should be sought out, recognised as public benefactors, and allowed means to do that work which their faculties, and theirs only, enable them to perform." ("Her Majesty's Geological Survey of the United Kingdom," &c., by J. Beete Jukes, F.R.S. 1867.)

#### Geological Subsidence and Upheaval

SIR J. HERSCHEL thought that the earth's crust floats upon an ocean of molten matter, and that the washing of detritus from the land into the sea, by altering the relative weight of different portions of the shell, occasions a subsidence of the ocean's bed and an upheaval of the land, which may be either gradual and insensible, like the process of denudation, or spasmodic and by fits and starts producing earthquakes and sometimes volcanic eruptions.

This theory was at one time adopted, at least partially, by Sir C. Lyell, but is not mentioned in the latest edition of his "Principles," and is generally rejected by geologists as at variance with the opinion held by Sir W. Thomson and others in regard to the internal solidity of the earth. But this objection may be avoided by modifying Sir J. Herschel's theory. We may repudiate his hypothesis that a great fiery ocean exists below the outer crust. We may arrive at many of the important conclusions which he drew from this hypothesis, and which he described as all that a geologist could require, by admitting either that *solid rocks are plastic*, or that *some of the lower and warmer strata of the earth are more pliable than the upper*.

As to the plasticity of solid bodies, it may be sufficient to refer to the experiments of M. Tresca (Comp. Rend. de l'Acad., 1864-65, and Annales du Conservatoire, No. 21). Dr. Tyndall (Glaciers of the Alps, p. 9) suggests the possibility that the contortions of the strata in the valley of Lauterbrunnen may have been produced by pressure acting throughout long ages on the rocks in their present hard and solid condition.

Again, the lower strata of our globe may be rendered more pliable than the superincumbent rocks by the great internal heat, although it may be insufficient to fuse them or even to maintain them in a viscous condition. Many of the geological effects of a molten ocean may thus be produced.

The theory that volcanic eruptions are caused by water percolating through superficial cracks may, perhaps, give a clue to the reason why volcanoes often occur in a great circle round the globe and in diametrically antipodal positions. When other causes concur to modify the form of the earth, the tidal strain occasioned by the sun and moon may often be required to overcome the *vis inertiae*; this strain being greatest in the great circles of the globe perpendicular to the direction in which the sun and moon happen to be, cracks would probably occur most readily in these circles.

It seems at least a curious coincidence that some areas of recent