

parted to their studies. The book is copiously illustrated with well executed woodcuts, most of which are original, and have been specially prepared for the purpose.

### 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.]

#### School Museums

IN the new instructions to inspectors as to the application of the New Code to Elementary Schools, it is stated that a Museum will be required in a school in order to make a school "excellent" under the "merit" clause.

I would suggest to your readers that here is an excellent opportunity for their employing the scientific knowledge they possess in promoting the study of nature in a very simple and easy manner. Let them offer first to instruct and interest teachers and pupil teachers in some one branch of knowledge—let it be botany, geology, or entomology. Let them show the teachers how to collect and press, say a dozen plants, help them to classify and name them, both in English and Latin, and let them teach say to the First Standard, what they know on the subject, making the children bring each plant after it has been shown. Even in town schools there will be some country friend who could send up two or three specimens every week in the spring and summer.

I would suggest that the discarded child school books will make herbaria, and convenient books for catalogue of specimens.

For a geological museum a small cupboard with, say in this neighbourhood, seven shelves, would hold two specimens from each of our prominent strata. Lower, Middle, and Upper Lias, the Midford, or as Mr. Witchell, of Stroud, wants to call them, the Cotteswold Sands, the Inferior Oolite, Fuller's Earth, and Great Oolite, all of which can be seen from this parish if the two higher beds are not actually in it. On the inside of the cupboard doors might be put, boldly coloured, sections of the strata. Geologists might greatly help in seeing that the names of the strata and specimens were correctly given and pronounced, and a catalogue written out. And if prizes were given to promote even the most elementary knowledge in teachers and scholars, much would be done to make "science subjects" interesting and useful.

I would suggest that natural history societies and field clubs should take this in hand in their own neighbourhoods, and by the expenditure of a very small sum of money start a natural history museum in every school.

A. SHAW PAGE

Selsley Vicarage, Gloucestershire, August 17

#### Two Kinds of Stamens with Different Functions in the same Flower

IN NATURE, vol. xxiv. p. 307 is a very interesting letter on this subject, in which while the functions performed by the two kinds of stamens are very clearly indicated, the *modus operandi* of fertilisation, it appears to me, is less clearly expressed. I have witnessed in many instances the visitation by various species of large Hymenoptera, such as *Xylocopa* and *Bombus*, of species especially of the genus *Melastoma*, possessing stamens in all points corresponding to that occurring in the *Heeria* described in the letter referred to and what takes place seems to be as follows. The large bees evidently make for the yellow platform offered by the short stamens, perhaps because they do not perceive the pistil and long stamens owing to their projection against the broad petaled corolla of the same colour in the background, and invariably receive the pistil between their legs, their feet settling on the fork of the connective, the instant effect of which is to collect the whole of the long stamens into a bunch, and to depress their anthers downwards and away from the body of the visiting bee, while the pistil remains in constant contact with its ventral side. At the moment of the bee's departure the hooks on the bee's feet by pulling on the connective fork raise the

anthers of the long stamens, so as to bring the tips of the collected bunch into contact with its sides and abdomen. Dr. Müller's statement "by moving the connective fork of the larger ones" is somewhat ambiguous; for it is movement only in one direction that is of avail in raising the anthers of the larger stamens, pressure at the connective hook of course tends to depress the anthers and keep them apart from the bee's abdomen while a very slight backward pull at once raises the anther.

In various observations and discussions arising out of this letter, both Dr. Burck (the assistant director of the Botanical Gardens in Buitenzorg) and myself were able to observe a fact of considerable importance that there was, at any rate in those species examined by us, a great difference in the pollen of the two kinds of anthers. The pollen from the short stamens was large and three-cornered, while that of the longer ones was very much smaller and of a more oval shape; and while both forms were found on the pistil, only the pollen from the long stamens seemed to be fertile. We could not detect any of the short stamened pollen with tubes ejected.

HENRY O. FORBES

Wai, Amboina, May

#### Habit of Spiders

I HAVE frequently observed that when a shock of any kind is imparted to the leaves or twigs, to which the web of the garden spider is affixed, the animal shakes violently in the centre of the web, so as to become almost or totally invisible to the eye; this quivering or dancing motion being kept up for many seconds, and then suddenly stopped. The same thing occurs, I have noticed, when a stick is presented suddenly to the occupant of the web. The reason for these movements, which appear to be effected by the spider in succession pulling the upper portion of the web downwards by means of his strong hindermost pair of legs, and then suddenly releasing it (the natural elasticity of the web greatly assisting the occupier in the execution of these movements), seems to be founded upon a desire on the part of the spider to effect concealment when it feels that danger is near; just as we notice gnats and crane-flies dance rapidly up and down, evidently with the desire of rendering themselves invisible, whilst at rest on the window pane, trusting no doubt to their speedy flight and general invisibility for protection when on the wing.

FRANK J. ROWBOTHAM

42, Lofrus Road, Shepherds Bush, W., August 21

#### Messrs. McAlpine's Atlases

I DOUBT not but you will grant me the privilege of replying to the remarks made by Prof. Parker under the above heading in your last issue, and fortunately in doing so I will not require to trespass much upon your valuable space. The letter deals first with myself personally, then with the Atlases.

With regard to his reference to my student history, it may suffice to say that I had no connection with the Biological Laboratory at South Kensington *some three or four years ago*. I studied at the Royal School of Mines from 1872 to 1875, spending Session 1874-75 in the Biological Laboratory; but as to the alleged copying of diagrams of type dissections, how, I ask, was this possible when, as far as known to me, such drawings were not in existence.

Again, his statement as to my having presented myself for examination in the two following years, appearing each time a place or two lower in the second class is equally destitute of fact. I was re-examined in 1876 and 1878, but instead of appearing either higher or lower in the second class, I invariably stood at the bottom of it.

I need not dwell further upon a personal matter, and it will not be necessary, after the above explanation, to say much about the Atlases. The opinions expressed with regard to my work it is not for me to call in question, but will simply content myself with saying that it has been favourably commented on by journals—scientific and medical, at home and in the colonies—only one of which I quote. Prof. Parker speaks of my work as being "of the most inaccurate and slovenly description," while the *Canadian Journal of Medical Science* says: "The truthfulness, accuracy, and neatness which mark each of its pages compel us to speak in very high terms of this book."

Polwarth Gardens, Edinburgh, July 31 D. MCALPINE

ORANGE CULTURE IN FLORIDA.—A correspondent inquires for the best work on this subject; perhaps some of our readers may be able to answer.