comical bits, the story of a new fossil discovered (p. 314); the boundary of the Caradoc Sandstone at Pentre Voelas (p. 318); and "a strange and marvellous history of a temptation and what befel thereon" (p. 323), must be read and laughed over, as also must the account of Miss Moggore and Miss Bood, natives of Murray and Darnley Islands, who *would* walk arm-in-arm with Mr. Jukes (p. 252).

Besides a vast number of letters to Prof. Ramsay, all more or less relating to geology, there are letters to Dr. Ingleby and other relatives; one on Versification (p. 377), in which two of Mr. Jukes's own verses appear. The annexed is a sample, probably intended for the Old Annual Survey Dinner: *—

> Free o'er the hills our feet shall roam,
> We'll breathe the mountain air, sir;
> Care shall not ever dare to come,
> Nor grief pursue us there, sir.
> Joyous in Nature's wildest scene,
> Where rocks lie topsy-turvy,
> And falling waters flash between,
> We'll prosecute the Survey.
> Oh, the Survey, the Geological Survey!
> Health and good humour shall be queen
> Of the Geological Survey!

We have religious beliefs considered (p. 375); views on Providence (p. 386); creeds (p. 409); political opinions (p. 405), and many other matters discussed.

But we have said sufficient to recommend the book to all who are likely to be interested in it. We would especially direct geologists to it, as being the record of the life of a man who did very much for their science—indeed, who died in its service. To his friends, who are to be found scattered far and wide, the title of the book is sufficient to recommend it to them. To his relatives and intimate companions his memory will always be dear.

It seems strange that Prof. Jukes's life should be dedicated to Prof. Sedgwick, his early teacher; but so it is—the old oak, though decayed and feeble, still puts out its green leaves; but the younger man, whom he bid God speed thirty years ago, has already rested from his labours. H. W.

OUR BOOK SHELF

The Science of Arithmetic. By James Cornwell, Ph.D., and Joshua G. Fitch, M.A. Thirteenth Edition. (Simpkin, Marshall, and Co., 1870.)

The School Arithmetic. By the same authors. Eleventh Edition. (Simpkin, Marshall, and Co., 1871.)

THESE books are too well known to mathematical teachers to need detailed notice from us. Both are very good, and stand in the first rank among the scores of arithmetics published in England. The explanations, arrangement and examples, especially in the former book, are generally very good. We will venture, however, to suggest two or three changes to the authors, which we think would render the book better still, and which our experience would make us wish to see universally adopted. The rule for multiplication of decimals given in these books is the old one of counting the decimal places. We think this becomes a rule of thumb. The method ought to be the same as that in multiplication of integers; and it is at once seen by the pupil that as in multiplying by tens and hundreds, the figures are shifted to the left; so in multiplying by tenths and hundredths, they are shifted to the right. The decimal point is brought down straight, and each line in the working has its meaning; as in the example, multiply 712·35 by 15·807:—

```
   712·35
    15·807
  ---------
  3561·75
  7123·5
   569·880
     4·98645
  ---------
  11260·11645
```

This is more certain to be understood *every time it is done* than the old counting rule, and each line means something. Again, in that schoolmaster's *crux*, the division of decimals, we have in the books before us, the old Case 1, Case 2, and Case 3; and everybody knows the result in an examination. A better method is this, which we indicate briefly. Explain first that you cannot divide until the quantities are of the same kind, and of the same denomination. You cannot divide 2*l.* by 3 pence, till you have reduced the pounds to pence. Nor can you divide tenths by thousandths, till you have reduced the tenths to thousandths. Hence, to divide 1·375 by ·0025, the dividend must first be expressed in the same denomination as the divisor, namely as ten thousandths; this amounts to marking off as many decimal places in the dividend as there are in the divisor, which is best done by drawing a line after the figure, and then dividing. It is plain that the result is integral until the figures on the right of the line are brought down. It is worth while, perhaps, to give examples of the different cases; the explanation is obvious from what has been already said—

Divide 7·9 by 4·308—

```
4·308) 7·900|00 (1·83..
       4·308
       -----
       35920
       34464
       -----
        14560
```

Divide 34·79628 by 2·5—

```
2·5) 34·7|9628 (13·91....
      25
      --
      97
      75
      --
     229
     225
     ---
      46
```

Lastly, the methods of summation by differences and interpolation are essentially arithmetical, and of considerable interest, and we think might be introduced with advantage in the larger work.

The miscellaneous questions at the end of the larger book are not particularly good. They are often tedious, and not sufficiently varied, suggestive, or difficult. Nevertheless, the books are very good, and will teach teachers as well as learners. J. M. W.

Skandinaviens Coleoptera, synoptiskt bearbetade af G. C. Thomson. Tom. X. 8vo. (Lund, 1868. London: Williams and Norgate.)

THERE are few investigations of more interest to the student of British Natural History than the comparison of our native productions with those of the Scandinavian peninsula, and no descriptive works published on the Continent, a knowledge of which is of greater importance to him, than those of the acute and laborious naturalists of Scandinavia and Denmark. The work done by these

* Alas! that this time-honoured institution of meeting "all hands" once a year should have fallen into disuse. It was a very bond of union.

men is usually of the highest quality, both for carefulness of investigation and clearness of statement; and the great similarity which exists between the faunas and floras of our islands and of the Scandinavian region, enables their work to be used to a certain extent as handbooks by British Naturalists. May their study lead the latter to imitate the Scandinavian mode of work! We are led to these remarks by the receipt of the tenth and concluding volume of Prof. Thomson's descriptive work on the Scandinavian Coleoptera, although this consists almost entirely of corrections, emendations, and additions to the contents of the nine previous volumes, in which the systematic description of those insects was completed. Prof. Thomson's work will be found of the highest value to the British entomologist, inasmuch as a very large proportion of the insects described in it are inhabitants of these islands, and many of the others will probably be discovered hereafter in the north of Scotland. The whole descriptive portion of the book is written in Latin, the characters, although often brief, are admirably drawn up, and the determination of the species is greatly facilitated by the excellent tables both of genera and species given throughout the work. Amended tables, introducing all new forms discovered during the progress of the book, are given in the second part of the ninth and in the tenth volumes. Although it appears under a Swedish title, the only portions of the work written in that language are the notices of localities of occurrence and critical remarks on genera and species, the former, at any rate, requiring little knowledge of Swedish for their comprehension. W. S. D.

Ichneumonologia Suecica, auctore Aug. Emil Holmgren. Tom. II. (Stockholm, 1871. London: Williams and Norgate.)

THIS is a second most important Swedish work, which illustrates in a striking manner the remarks which we made in noticing M. Thomson's "Skandinaviens Coleoptera." In this the author has commenced a monographic revision of the Swedish members of one of the most difficult families of insects, the Ichneumonidæ, which he here treats in an almost exhaustive fashion. We cannot venture to say how far he is correct in his synonymies, or in the reference of supposed species to others as varieties; but he has spared no pains in the preparation of his descriptions, and the student of his book will find no difficulty in understanding precisely what he means. This work, when completed, will be an invaluable aid to the few entomologists who venture upon the study of the Ichneumonidæ. W. S. D.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.*]

The Planet Venus

THIS beautiful planet being now very favourably situated for examination, it may interest many of your astronomical readers if I give a brief description of the markings which have recently been seen on her surface. That these markings are exceedingly difficult objects to detect, even with a powerful telescope and under favourable atmospheric conditions, there is no doubt, and many observers have consequently failed to see them. The late Rev. W. R. Dawes, although possessed of very excellent vision, could never make them out, and it seems that the fact of their existence is doubted at the present time by some observers. At the meeting of the Royal Astronomical Society on November 10 last, "the Astronomer Royal mentioned that Venus was very favourably situated for observation, especially for noticing spots if any existed on her surface, his own experience being that there were no certain markings thereon, which the President corroborated." The opinions of such eminent astronomers should always be carefully considered, and the matter in dispute thoroughly investigated, before a contrary opinion is entertained. In the present case, however, I think that there is a sufficiency of evidence to prove that markings of various forms exist on the surface of the planet. I am the more particularly induced to say this by having before me upwards of sixty sketches of their appearance, made by experienced observers, who in the making of observations employ telescopes of great power and excellent definition. No doubt the faint cloud-like markings can only be made out after attentive gazing, and then are scarcely visible, though they have been distinctly seen by many observers. It is difficult to account for the fact that Mr. Dawes could not distinguish them, but perhaps the reason may be apparent, if we consider that an observer who is the most successful in the observation of faint companions to double stars, cannot satisfactorily observe the faint markings with which the planet's disc is diversified. Many observations of the spots were made at Rome in 1839–1841, and of six observers those were the most successful who experienced the greatest difficulty in detecting minute companions to large stars.*

With respect to the spots and markings which have recently been examined, it may be said that they are of various forms and degrees of visibility. Some of them are only just perceptible after a long and careful scrutiny of the planet's disc, while others are much more apparent, and distinguishable with less difficulty. Whether or not they are permanent in their form remains to be determined from a comparison of the whole of the observations. Some of the representations of the cloudy spots taken at different dates seem to be somewhat similar in their principal features. Several times that position of the planet's surface immediately adjacent to the terminator has been seen to be interspersed with small bright circular spots, which seem to be analogous to lunar formations. These bright spots have been seen by several of those who have critically examined the planet's appearance. They were seen by Mr. T. H. Buffham on May 4 and May 6, 1868, and Dr. Huggins at the last meeting of the R.A.S. said that "he had occasionally seen dusky spots, but he considers them as very uncertain or illusive. When, however, the crescent was thin and the planet near the earth, he had seen minute points of light on the terminator, which by most observers was described as irregularly indented. He had also noticed that when definition was very good, appearances analogous to those of lunar craters had been seen. Dr. De la Rue had often seen markings on Venus similar in character to those observed on Mars." An observation made by Mr. F. Worthington, with a 13-inch reflector, on June 11 last, confirms the statement made by Dr. Huggins in reference to the bright markings on Venus being similar to objects on the surface of our satellite. He writes, "Definition extremely good. The markings were very clearly seen, and bore a very remarkable resemblance to the craters and inequalities of the moon as seen with a low power, say an opera glass." From the foregoing it would appear to be beyond a doubt that, when the planet is in a crescent form, small bright markings, resembling lunar craters, are perceptible. These objects should be persistently looked for, and when observed the details of their appearance and position duly registered.

That the dark, cloud-like markings are similar to those on the surface of Mars, as stated by Dr. De la Rue, seems also an established fact. Mr. Henry Ormesher saw several irregular spots on Venus on May 10 last, and he says they were "clear and well-defined, and reminded me very much of those on the planet Mars, as they had much the same appearance." Of course the markings on Mars are much more conspicuous than those visible on Venus, but in their appearance there is no doubt that they are not altogether unlike.

In many of the drawings which I have before me the outlines of the cloudy patches do not terminate abruptly as in the case of the penumbræ to solar spots (*maculæ*) but seem to fade away into the general brilliancy of the disc. In some of the sketches, however, the boundary of the spots appears to have a well-marked outline. In regard to the terminator, it seems to have a very serrated edge, but in some of the drawings this is not depicted.

Referring again to the coincidence in the appearance of the bright spots of Venus and the craters of the moon, I would draw the attention of your readers to the Rev. T. W. Webb's "Celestial Objects," second edition, p. 51, in which there is an observation of interest recorded. WILLIAM F. DENNING

Hollywood Lodge, Cotham Park, Bristol, Nov. 28

*See Webb's "Celestial Objects," p. 50. It is there stated that "a very sensitive eye which would detect the spots more readily would be easily overpowered by the light of a brilliant star, so as to miss a very minute one in its neighbourhood."