centric layers, the independent pressure of each successive course is diverted in a line parallel with the circumference. To carry out the analogy we have merely to suppose two such semicircular arches, E F E and E D E, placed base to base in contact; the balance of resistance is completed, and we get a perfect epitome of the equilibrium of gravitation in the crust of the earth. Will not this satisfactorily explain the point noticed by Mr. Forbes, that the actual density of the earth falls short of its calculated density, on the estimate of the *accumulation* of superincumbent pressure? and will not the lateral pressure, analogous to that existing between the voussoirs of an arch, account for the horizontal force which seems to have operated in the production of Slaty Cleavage?

GEORGE MAW.

BENTHALL HALL, BROSELEY,
Feb. 10*th*, 1868.

I.—THE GRAPTOLITES OF THE SKIDDAW SERIES, ETC.
II.—ON THE CLASSIFICATION OF GRAPTOLITES.

SIR,—1. In the GEOLOGICAL MAGAZINE for January (p. 32), an abstract is given of my paper on the Graptolites of the Skiddaw Series, read before the Geological Society, December 4th, 1867.

As the generic characters of *Dichograpsus* are therein mis-stated, I should be glad if you will allow me to correct the error,[1] since I observe that it has been reproduced in a recent paper on Graptolites.

The presence of a corneous cup does *not* form a character of the genus *Dichograpsus*, since it is present in some species of the genus, and is uniformly absent in others. It likewise occurs in some *Tetragrapsi*, whilst it is never found in others, as *T. bryonoides*, Hall, and *T. quadri-brachiatus*, Hall. Lastly, it is occasionally found in some *Diplograpsi*, as *D. bicornis*, Hall. As the remainder of the definition of the genus is also incorrectly stated, I may be permitted to add that *Dichograpsus* is sufficiently defined by "the possession of a frond composed of a variable number (always more than four) of simple stipes, arising from a central non-celluliferous stem or funicle. The stipes are monoprionidian, and are given off from the funicle in a radiating manner."

II.—As a recent paper of mine on Graptolites (Ann. and Mag. Nat. Hist. Jan. 1868) has formed the subject of a somewhat lengthy criticism by Mr. W. Carruthers, in the GEOLOGICAL MAGAZINE for February, (p. 64), I trust you will afford me space for a reply. For the sake of brevity as well as clearness, I will notice such points as I may think necessary, in the order in which they occur in Mr. Carruthers' paper, premising that I have no intention of criticising, and shall simply touch upon such points as concern me personally.

1. Mr. Carruthers finds fault with me for "summarily" dismissing the Polyzoa, and for asserting that they "have, as a rule, a more or less calcareous test, and the individuals forming the compound organism are not united by any organized connecting substance."

[1] The abstract here referred to, is furnished by the Assistant Secretary of the Geological Society, and is merely reproduced in the GEOLOGICAL MAGAZINE.—EDIT.

In answer I have simply to state, that my paper was *intended* to be simply an abstract, and "summary" of a more detailed one, which I trust may one day see the light, and that it was, therefore, impossible for me to enter into minutiæ. Secondly, though perfectly aware of this existence of free and corneous Polyzoa (the Ctenostomata of Busk), the above statement nevertheless remains true of the Polyzoa, "*as a rule*," and I see no reason for altering it.

2. Mr. Carruthers charges me with adopting a statement of Hall's, as to the free mode of existence of Graptolites, without acknowlegement. To this it is quite enough to reply, that the statement in question was not made as an original observation on my part, and that it is impossible in a general paper to quote references for all the facts which have been previously noticed. As to my making a "practice" of so doing, no denial on my part can be needed. My published papers on the subject bear ample witness how much I am indebted for real solid information to the writings of Hall, Salter, Harkness, Barrande, and Geinitz. The changes in my views, to which Mr. Carruthers refers, have been the result of the progress of my own researches, and I could not, with honesty, attribute them to any "corrections" from Mr. Carruthers.

3. As for my use of the word "gonophore," instead of "gonotheca," to signify the external bell-shaped ovarian capsule of the Sertularidæ, it will suffice to make the following quotation from Prof. Greene, whom, I suppose, Mr. Carruthers will allow to be somewhat of an authority upon the Hydrozoa. "In the Sertularidæ .... the reproductive bodies appear externally as distinct buds or sacs, for which Prof. Allman has proposed the name of 'gonophores'" (see Coelenterata, p. 40). This is but one of many similar statements in the same work, but it will, I imagine, be sufficient to justify my employment of the term.

4. With relation to the genus Pleurograpsus, the facts of the case are simply these. In 1852 Geinitz proposed the name Cladograpsus to include certain Graptolites (species Gemellæ, Bronn.), comprising Diplograpsus ramosus, Hall, and several species of Didymograpsus. In 1859, seven years afterwards, Mr. Carruthers applied the same name to a very peculiar branching Graptolite from Dumfriesshire, without giving any generic characters of any kind, an omission which he failed subsequently to rectify. The same Graptolite was described by me in March, 1867, in a paper read before the Geological Society of Edinburgh, in which I described it as the type of a new genus, giving a full diagnosis, and terming it Pleurograpsus. (See also Geol. Mag. Vol. IV. No. 6, June, 1867.) In June of the same year, Mr. Carruthers re-described the species as a Cladograpsus, this time assigning characters to it as a new genus. As, however, these characters are totally different from those of the original genus of Geinitz, and as I was the first to give any generic description, the name Pleurograpsus must obviously be retained.

Finally, to the personalities with which Mr. Carruthers has seen fit to adorn his paper I shall return no reply, considering them unworthy of any genuine scientific controversy. I shall content

myself with quoting the following passage, from a letter by Mr. D. Forbes in the last number of your Magazine, the sentiments of which I heartily endorse.

"No man in Europe can expect to retain any portion of the field of science exclusively for himself, or to travel alone on any of the many different roads which lead to one and the same scientific truth. If real progress is to be made in science, the student must reason for himself, and not be content with accepting, merely on authority, opinions which are inconsistent with his own deductions and experiments; nor should he be deterred by the opposition to be expected from those already in office or authority, who are sure to be jealous of intruders on what they imagine to be their own domain, and, doubtless, dislike having their peace of mind disturbed by innovations."

HENRY ALLEYNE NICHOLSON.

QUEEN STREET, KEIGHLEY, *February 10th*, 1868.

GEOLOGICAL SURVEY OF BOHEMIA.

SIR,—I send you a short extract from the Report of our Geological Surveyors in Bohemia. A reference to the map shows that these labours have been very little disturbed by the late war.

The Orographical section (Prof. Koristka) completed, in the year 1865–6, 5,000 trigonometrical measures over a surface of 123 German square miles.

The Geological section (Prof. Krejci) have continued the examination of the Chalk formation, which will be very valuable when the large collection of fossils made by me shall be determined.

During the past three years I have placed 3,536 chalk fossils from 65 different localities in the Museum. One locality alone, called Korycan, has supplied 70 species.

The most important discoveries consist in (1) the finding of freshwater shells in the Upper Greensand, and (2) of a large deposit of Radiolites, near the city of Kuttenberg, where a celebrated Gothic Church is entirely built of these curious shells.

In 1867, 1,500 chalk fossils have been added to the Museum from 17 localities.

A new locality for *Eozoön* has been met with in the Gneiss, near Skuc, in S.E. Bohemia.

And, lastly, we have discovered reindeers' horns in the diluvial Loëss, near Prague. MED. DR. ANTON FRITSCH.

ROYAL BOHEMIAN MUSEUM, PRAGUE, 26th Dec., 1867.

MISCELLANEOUS.

AWARD OF THE WOLLASTON GOLD MEDAL AND DONATION-FUND.—At the Anniversary meeting of the Geological Society held Feb. 21, 1868, the President announced the Award of the Wollaston Gold Medal to DR. CARL FRIEDRICH NAUMANN, Foreign Member of the Geological Society, Professor of Geology and Mineralogy in the University of Leipzig, etc., in recognition of his labours, extending over nearly half a century, in the departments of Geology, Mineralogy, Crystallography, etc. The President also stated that the Balance of the Proceeds of the Wollaston Donation-fund had been awarded to MONS. J. BOSQUET, of Maestricht, in aid of the valuable researches on the Tertiary and Cretaceous Mollusca, Entomostraca, and other fossils, of Holland and Belgium, on which he sah been so long and successfully engaged.