

## 3. THE TWO SERIES.

On comparing the two series of igneous rocks outlined above, it will be seen that there is a well-marked similarity in sequence and characters, but this similarity does not extend to details. The Older Series forms two anchi-monomineralic differentiates, one a femic type consisting of predominant pyroxene with subordinate olivine, the other of a felspathic type provided by the small anorthosite of Portsoy. The Younger Series has only a locally developed monomineralic phase, and its ultrabasic member is provided by a predominant olivine type with subordinant pyroxene and plagioclase, intrusion occurring before the production of a non-felspathic femic magma had been possible. So, feldspar is common in the picrite of this series, but is never found in the pyroxene-olivine rocks of the Older Series. The basic members of the two series again present the same general types of gabbro, enstatite or hypersthene-gabbro, and diorite, but are different in the relative development of such types, in the predominance of certain species of pyroxene, and in the widespread occurrence of olivine in the Younger Series. The acid members are perfectly similar, both being biotite-microcline granites. The areal relations of the Older Series and of the Younger Series of the Huntly Mass show the same order of magnitude for the different differentiates of each series.

The distinction between the two series may be based upon the degree of alteration of the rocks, the character of this alteration among the Older Series, the characters of the predominant mineral in the ultrabasic facies, and the character of the pyroxenes in the two orthorhombic pyroxene-gabbros. In the field, the general greenish appearance due to the alteration into hornblende of the augite of the Older Series and the occurrence sooner or later of cataclastic foliation in them are of great value. Finally, a most important criterion is supplied by their metamorphic effects on the country rocks. The contact rocks produced by the Older Series are foliated by the later regional folding, whereas the effect of the intrusion of the Younger Series is to obliterate this foliation.

It may be stated, therefore, that in this district there are two petrogenic cycles separated by an epoch of great earth movement. Between Huntly and Portsoy the rocks of these two cycles have risen along almost the same belt of country and present great similarities in their main characteristics.

In conclusion, the author wishes to express his indebtedness to Dr. John Horne, F.R.S., and to Dr. J. S. Flett, F.R.S., for many helpful suggestions.

V.—BRACHIOPOD NOMENCLATURE: *SPIRIFER* AND *SYRINGOTHYRIS*.

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ACCORDING to a strict interpretation of the international rules of zoological nomenclature the generic name *Spirifer* is wrongly used for the group including *Anomites striatus*, Martin, and should be restricted to the group including *Anomites cuspidatus*, Martin,

i.e. it should replace *Syringothyris*, Winchell. My object in pointing this out is not to urge a strict interpretation of the international rules in this case, for it would serve no useful purpose to attempt to displace a name which through a century of usage has become the geological equivalent of a household word, but to show the need for geologists to combine with zoologists in demanding a list of *nomina conservanda* in zoology.

In 1814 or 1815 James Sowerby read a paper before the Linnean Society describing the presence of spiral coils in *Anomites striatus*, Martin, and proposing for it the genus *Spirifer*. He also stated that he suspected that *Anomites cuspidatus*, Martin, possessed similar coils. The substance of this paper became known not only in England but on the Continent, but the paper was not published until 1821.<sup>1</sup> In the meantime Sowerby published the genus in *Mineral Conchology*, vol. ii, 1818, pp. 41–43, Tab. 120, giving a diagnosis of the genus, followed by a description of *Spirifer cuspidatus*. Other species are mentioned, but none are named. King, Meek, and others have accepted *Anomites cuspidatus* as the type of *Spirifer*, but Davidson urged that Sowerby's intention that *Anomites striatus* should be the type must be accepted, and in this he has been followed by most subsequent authors, and *Anomites cuspidatus* has since been referred to the genus *Syringothyris*, Winchell, 1863. If *Anomites cuspidatus* is regarded as the type of *Spirifer*, *Syringothyris* becomes a synonym of *Spirifer*, while the group of *Anomites striatus* must take another name. Dall<sup>2</sup> sums up the position thus: If the work of restriction were to be done over again, it is probable that most authors would consider the rules of nomenclature better served by taking *cuspidatus* as the type, but the reverse process has been the rule among authors so long that it would be a serious detriment to science to attempt such a change at present.

Since the Fourth International Zoological Congress at Cambridge in 1898 there has been a Permanent International Commission on Zoological Nomenclature which studies questions of nomenclature and renders opinions upon cases submitted to it. Opinion 30<sup>3</sup> on Swainson's *Bird Genera* of 1827 almost exactly applies to the case of *Spirifer*. Swainson wrote and sent for publication to the *Zoological Journal* a paper containing diagnoses of several genera, with explicit designation of their types. This first written paper was unexpectedly long delayed in publication, greatly to the disappointment of the author, as he stated, who was powerless to prevent the inopportune delay. This paper was published in two

<sup>1</sup> Fide W. H. Dall, "Index to the Names which have been applied to the Subdivisions of the Class Brachiopoda": Bull. U.S. Mus., No. 8, 1877, p. 63. F. J. North ("On the Genus *Syringothyris*, Winchell": GEOL. MAG., Dec. V. Vol. X, pp. 393–401, 1913) gives the date of publication as 1818. I have not access to the publication in question, but all authors agree that it was published subsequently to *Min. Conch.*, vol. ii.

<sup>2</sup> Loc. cit.

<sup>3</sup> "Opinions rendered by the International Commission on Zoological Nomenclature." Opinions 30–7. Smithsonian Institution, Publication 2013, 1911, pp. 69–72.

parts appearing April–July, 1827, and August–November, 1827. In the meantime he described some new species of Mexican birds in a paper which appeared in the *Philosophical Magazine* in May and June, 1827, referring some of them to the new genera proposed in the earlier written but later published paper. The International Commission held that Swainson's bird genera in the *Philosophical Magazine* of 1827 are monotypic, and according to Article 30 (c) the species mentioned are types of their respective genera. Therefore, these types must take precedence over the designated types of Swainson which occurred later in the *Zoological Journal* of 1827. The argument on which this opinion was based was stated as follows:—

“In order to fully realize the bearing of the principle involved in the present case, let us ask ourselves the question: What was the type of these genera in the interim between the prior publication in the *Philosophical Magazine* and the type designation in the *Zoological Journal*? During these ‘two or five months (as the case may be)’ the genera rested solely on the generic name and the single species described in the *Philosophical Magazine*. No other species was known to belong to these genera during the two or five months. Surely during that period these generic names were monotypic, and could rightfully have no other type than the only species then described. But if a genus once has a rightful type there is no way under the international rules to substitute another later. If a genus has been monotypic for two or five months, or any other length of time, subsequent publication cannot alter its status however plausible may be the argument otherwise, and this status can be no more ‘subject to change’ than ‘designation of the type’ itself.

“Any interpretation other than the one here followed might give rise to serious complications. For instance, to admit that a later article can undo the types actually (though possibly unintentionally) published in an earlier article, as in this case, would make it possible for an author to publish a genus as monotypic and then, years later, to alter his type in some manuscript the publication of which had been purposely or unintentionally delayed for decades. Thus, unless an author definitely stated that a genus was monotypic, no genus originally published with mention of only one species could be looked upon as having the genotype definitely established until after the author's death, and after it was proved that he left no unpublished manuscript behind him.”

The case of *Spirifer* is extremely similar but simpler. From 1818 to 1821 the genus was monotypic so far as Sowerby was concerned, and included only *Spirifer cuspidatus*, and this, therefore, cannot be displaced as the type of the genus if the international rules are to be adhered to.

Thanks to *Punch*, the name *Ichthyosaurus* has become a household word in a more complete sense than *Spirifer*, but it also can be used only in contravention of the international rules. It was proposed by Conybeare in 1821, but it is preoccupied by *Proteosaurus*, Home, 1819. Lydekker<sup>1</sup> stated the case thus: “There is no real

<sup>1</sup> R. Lydekker, *Cat. Foss. Rept. Brit. Mus.*, pt. ii, 1881, p. vii.

justification for superseding the earlier name *Proteosaurus* by the later *Ichthyosaurus*; but since the latter name has been universally adopted, the writer, after consultation with the Director of the (British) Museum, has come to the conclusion that this is one of the cases where an adherence to the rule of priority is not advisable."

An analogous case is furnished by the common mollusc, popularly known as *Octopus*. As a matter of fact *Octopus*, Lamark, 1798, is preceded by *Polypus*, Schneider, 1784, and in this case malacologists have applied the rule of priority and displaced *Octopus*,<sup>1</sup> but it may be doubted whether the interests of science are best served by such action.

These three cases, and doubtless many others which could be cited, show that a rigid application of the law of priority will displace names which by a century of usage have found their way into hundreds of textbooks, and even into popular literature. The best way to avoid so regrettable a step is for an International Zoological Congress to adopt a list of *nomina conservanda*. This paper is written to enlist the co-operation of geologists in creating a public opinion in this direction.

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## REVIEWS.

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### I.—NOVITATES PALÆOZOICÆ.

PALEONTOLOGIC CONTRIBUTIONS FROM THE NEW YORK STATE MUSEUM.

By RUDOLF RUEDEMANN. N.Y. State Mus. Bulletin, No. 189. 226 pp., 36 pls. September, 1916.

THE belated appearance of this review must be excused by the War's delays, which hindered the receipt of the volume. It would, however, be a pity to pass over for that reason all the observations of interest that Dr. Ruedemann has here collected. Let us consider a few of them.

*Plumatina plumaria*, from sandy shales of the Portage group, described by J. Hall as a graptolite and referred by J. W. Dawson to the plant *Lycopodites*, is here said to possess no thecæ, but to have an inner solid carbonaceous (? chitinoid) axis and an outer granular (? calcareous) rind, comparable with the structure in the Gorgonidæ. The fossils are therefore referred provisionally to the Alcyonaria.

Another plant-like fossil, *Buthotrephis lesquereuxi*, from the Silurian Eurypter beds, is found to consist of twisted thin tubes opening on the general surface in pores (about .5 to 1 mm. linear), and is referred to *Inocaulis*, which Dr. Ruedemann regards as a graptolite allied to *Dictyonema*. Some species hitherto referred to *Dictyonema* (*D. furciferum* Rued., *D. cervicorne et alia* Wiman) are shown to have apertural processes with forked ends which attach themselves to the neighbouring branch, and so, while outwardly resembling the dissepiments of *Dictyonema*, differ from them in origin; they are placed in a new genus *Airograptus*, which should have been spelled

<sup>1</sup> e.g. H. Suter, *Manual of the New Zealand Mollusca*, Wellington, 1913, p. 1062.