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**EDITORIAL**


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**USAGE OF STRATIGRAPHIC NOMENCLATURE AND CONCEPTS IN THE JOURNAL  
OF SEDIMENTARY PETROLOGY OR TIME, PLACE, AND ROCKS  
— HOW TO KEEP THEM SEPARATE.**


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**INTRODUCTION**

The subject matter of many papers in this journal includes stratigraphic nomenclature and concepts because the data and interpretations come from the ancient rock record. The purpose of this short editorial is to provide guidelines to make it easier for authors to compose the stratigraphic part of their manuscripts so as to communicate clearly with readers and, incidentally, to avoid the ire and blue pencils of the editorial staff. All statements in any manuscript should, of course, be clearly stated and free of possible misinterpretation by the reader. Such clarity is especially important for statements concerned with the complex relationships of descriptive rock bodies in an interpreted time context as occur in the stratigraphic record.

The suggestions in this editorial are based on several years of experience in reviewing and editing manuscripts containing stratigraphic observations for this journal. What follows is intended to be a set of general guidelines seasoned with a few grains of specific advice, but not an exhaustive list of do's and don't's.

**CODE OF STRATIGRAPHIC NOMENCLATURE**

The Code of Stratigraphic Nomenclature (American Commission on Stratigraphic Nomenclature, 1961 and 1970) is the "bible" or North American stratigraphic usage, although it lacks the literary style and certainly will never attain the popularity of the original Bible. Most questions on classification, usage, naming, capitalization, etc. may be answered by reading the code. You may not agree with everything in the code—

neither do I! Nevertheless, it is the official document for North American stratigraphic usage in this journal and has been adopted by a large number of North American geological organizations.

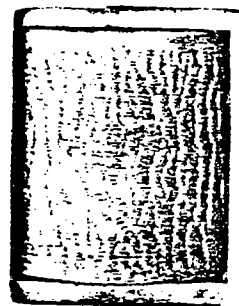
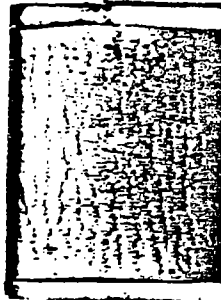
The original version of the current code was published during 1961 (American Commission on Stratigraphic Nomenclature, 1961). A 1970 revised edition is available from the A.A.P.G. (American Commission on Stratigraphic Nomenclature, 1970).\* The U.S. Geological Survey uses a reprint of the 1970 revised code that also contains quite useful additional explanations and examples (Cohee, 1974). Amendments and proposed amendments to the code are published as occasional notes in the A.A.P.G. Bulletin, the latest being by Macqueen and Oriel (1977). To date, amendments have been rather minor. For authors writing on areas outside North America, the International Stratigraphic Guide (Hedberg, 1976) is recommended as a substitute for the North American code. This guide is, in several respects, more complete than the North American code and also is recommended reading for North American workers. Many other national or regional stratigraphic codes exist; they are listed by Hedberg (1976, p. 104-106 and 186-187).

**CAPITALIZATION**

Many authors seem to be uncertain about capitalization of stratigraphic names, possibly because the rule was altered in the 1961 code so as to require capitalization of the

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\*P.O. Box 979, Tulsa, Oklahoma 74101. \$1.00 (\$0.80 to A.A.P.G. or S.E.P.M. members).



initial letter of the formation or lithologic unit name as well as the geographic name. Nearly all capitalization questions can be answered by remembering the simple rule: *All words in every formally named stratigraphic unit begin with capital letters.* For example, the Twowells Sandstone Member of the Dakota Sandstone contains rocks which are included in the Cenomanian Stage and were deposited during a brief phase of the Cretaceous Period. It is permissible to use stratigraphic units of member or bed(s) rank that have never been formally named; however, only any geographic locality contained in the name should begin with a capital letter. For example, the informal, but economically important, Jackpile sandstone member of the Morrison Formation derives its geographic name from the Jackpile Uranium Mine in New Mexico (note that neither "sandstone" nor "member" are capitalized).

formal stratigraphic nomenclature are solved, the usage of informal, more vaguely defined words generally remains. In most papers dealing with ancient rocks, the author is reconstructing geologic history, at least partially. In other words, past events (time-bounded) in paleogeographical locations (space-bounded) are interpreted from evidence preserved in the presently existing stratigraphic record. Therefore, it behooves the author to be extremely careful in differentiating clearly between concepts of time and concepts of space. Most of the confusion between time and place relationships is produced by improper usage of a few critical words. These words only should be used in either a time or a place context in stratigraphy, even though some may be used in both contexts in ordinary English. Some of these words are part of formal stratigraphic classification (Lower and Upper Cretaceous Series vs. Early and Late Cretaceous Epochs, for example), but most are not. Table 1 lists a few pairs of such time and place words that are commonly used. The interested reader can certainly add others to this list.

Uncapitalized time-stratigraphic and geologic-time units may be used to indicate less precise boundaries than formally defined units. For example, upper Cretaceous may mean quite generally the upper part of the Cretaceous System in contrast to Upper Cretaceous (Table 1), which formally includes the Cenomanian through Maastrichtian Stages.

TIME AND PLACE WORDS

After the problems of proper usage of

TABLE 1.—Time and place words

Time	Place
Late . . . . .	Upper
late . . . . .	upper
Medial* . . . . .	Middle
medial** . . . . .	middle
Early . . . . .	Lower
early . . . . .	lower
young(er) . . . . .	high(er)
old(er) . . . . .	low(er)
post- . . . . .	super-
pre- . . . . .	sub-
after . . . . .	above
before . . . . .	below
when . . . . .	where
while . . . . .	whereas
sometime(s) . . . . .	someplace(s)
often . . . . .	abundant
occasionally . . . . .	locally
during . . . . .	in

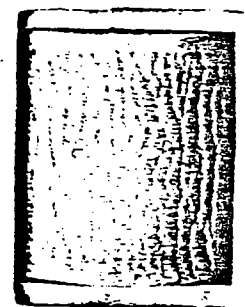
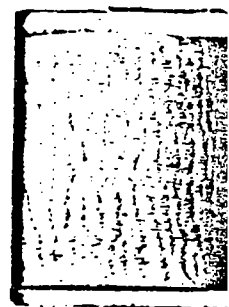
\* also acceptable as Middle.  
 \*\* also acceptable as middle.

If you are ever in doubt about time or place word usage, try applying the terms in question to a common, non-stratigraphic situation. For example, it would be patently ridiculous for me to write, "I was busy writing this editorial in upper Friday during the early floor of Overman Hall, but I stopped and went to happy meter at the local pub during an unconformity and did not finish it until the top of the week"! Or, how many times have you read a statement similar to the following? "Fossils sometimes occur in the limestone." This implies that the fossils appear in the limestone only during certain times—perhaps only during fossil-hunting season?

MISCELLANEOUS

*Original Naming of a Rock-Stratigraphic Unit*

In many cases, it is a good idea to cite the original reference in which a rock-stratigraphic unit was named. This is especially recommended in the case of a poorly known unit or if some controversy exists about the unit's name, rank, or boundaries. In the latter



case, an explanation or several references may be necessary. However, be careful not to lengthen your manuscript unduly with a lot of nomenclatural history unless required for understanding. The series of Lexicons of Geologic Names of the U.S. (Wilmarth, 1957; Keroher and others, 1966; Keroher, 1970) are excellent sources for historical background on stratigraphic units. For areas outside the U.S., check the Lexique Stratigraphique International (Union Internationale des Sciences Géologiques, 1956-1977).

*Proposal of a New Rock-Stratigraphic Name*

If, in your paper, you are formally proposing a new name for a unit, a specific set of rules is specified by the code (American Commission on Stratigraphic Nomenclature, 1971, Article 13). You must state your intention to name a formal unit, give the formal name and its type locality, include a type stratigraphic section, and describe the distinctive characteristics of the unit as well as its boundaries, contacts, shape, and dimensions. The unit's age and correlation with other units should be given, if possible. In revising an existing unit, as many of these rules should be followed as are practical. The International Stratigraphic Guide (Hedberg, 1976) has similar requirements.

*Stratigraphic Columns, Sections, and Tables*

In many papers where there are several rock-stratigraphic units discussed, a figure or table illustrating or listing the units is

AGE	EPOCH	FORMATION
65 m.y.	Late Cretaceous	Obscura Shale
		Perfecta Sandstone
100 m.y.	Early Cretaceous	hiatus
135 m.y.	Late Jurassic	Horrrosa Formation
150 m.y.		

FIG. 2.—Names and ages of stratigraphic units present in the Ficticia area, New Mexico.

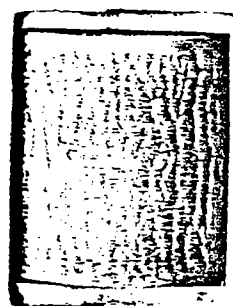
commonly desirable. As a general rule, time-stratigraphic units (System, Series, Stage, etc.) should be used in illustrations with rock-stratigraphic units, especially if the vertical scale represents thickness (Fig. 1). Unconformities and contacts are shown in such illustrations as lines separating adjacent, abutting rock-stratigraphic units. Illustrations using geologic-time units (Period, Epoch, Age, etc.) should be used only if the vertical scale represents time units (million years, etc.). Hiatuses are illustrated in these cases as actual gaps in the column (Fig. 2). The rock-stratigraphic unit names used as examples in Figs. 1 and 2 are all fictitious.

*Stratigraphic Terms of Variable Meaning*

There are many stratigraphic terms that may have variable meanings, both historically and according to different authors. Such terms include facies, correlation, zone, etc. Therefore, these useful words should be accompanied by your precise meaning of them or by quoting your favorite author's definition.

CONCLUSION

Clarity, consistency, and correct usage of stratigraphic nomenclature and of time and place terminology and concepts are of the utmost importance in writing about the ancient stratigraphic record because of the complexity between rock-stratigraphic relationships and time-stratigraphic relationships. Authors should attempt to follow



SERIES	FORMATION	THICKNESS
Upper Cretaceous	Obscura Shale	1500 m
	Perfecta Sandstone	1100 m
Upper Jurassic	Horrrosa Formation	500 m
	0 m	

FIG. 1.—Names and thicknesses of stratigraphic units present in the Ficticia area, New Mexico.

closely the rules and practices of the Code of Stratigraphic Nomenclature for North America or the International Stratigraphic Guide for areas outside of North America.

#### ACKNOWLEDGMENTS

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