

their ultimate failure; arbitrariness and artificiality. These aspects were pointed out in an eloquent reply from John Clegg, representing the combined opinion of the high-pressure group at Brigham Young University. The experiences of other fields indicate a naming scheme which is arbitrary or artificial will not survive the test of time. The arbitrariness of most naming schemes is self-evident. An attempt to avoid an artificial division of the pressure scale by basing the naming of the ranges on the capabilities of present apparatus and materials, e.g., liquid limit, also will become meaningless as techniques and materials improve. The approach which appears to have the most promise in this respect is to base the pressure-region divisions on phenomena such as the  $Bi_I$ - $Bi_{II}$  transition. Even this scheme faces the problem that 25 kbar at 4 K or 4000 K is much more impressive than 25 kbar at 300 K.

In view of the foregoing considerations, we feel it would be unwise to attempt to restrict the description of pressure to various regions described by a list of adjectives. In time, a natural demarcation of pressure regions may develop; but at present, adopting an arbitrary list of adjectives and region limits could complicate rather than alleviate the problem.

The basic communication difficulty presented by the lack of accepted definitions for pressure regions is important primarily in titles and abstracts. The lack of precise terminology is not a severe handicap when a speaker is describing his work, for even if he fails to mention the actual pressure in kilobars we may ask during the discussion. Likewise, in reading an article the pressure may be obtained from the graphs and description of the apparatus if it is not present in the text. The real problem arises when one must justify investing the time to attend a lecture or obtain and read an article based on the information provided in the title or abstract. A classic example of an uninformative title is the following: "Synthesis of Diamonds Under High Pressures." Without further investigation one may only guess whether this title refers to a GE type experiment at 80 kbars or a vapor-deposition experiment at 45 psi.

Most communication difficulties in the high-pressure field may easily be eliminated without resorting to artificially imposed terminology. In line with this approach, the following guides

concerning high-pressure publications are proposed:

1 If the paper is concerned with short duration, nonstatic stresses, this should be pointed out explicitly by inclusion in the title or key words such as - dynamic, shock, impact, or transient.

2 The maximum pressure obtained during the experiments should be presented in the title in one of the following ways (in order of preference):

(a) State in the title; e.g., "NMR Measurements to 130 kbar."

(b) Include in parentheses; e.g., "Hall Measurements in the High Pressure (103 kbar) Phase of  $PXeTeO_7$ ."

(c) Use the subscript notation based on the bar as explained in the Appendix; e.g., "Diamond Synthesis at High Pressure<sub>1.6</sub>."

3 The apparatus and materials used during the experiment must be described by covering references or a detailed discussion.

4 The values of the calibration points used must be noted and/or referenced. This will facilitate future data correlation as the values of the calibration points become better known.

We feel adhering to the foregoing proposals will not limit the author's freedom of expression, and the improvement in communications will justify the standardization.

#### APPENDIX

Proposal 2(c) suggests a notation to be used in titles when the author finds it inconvenient to use either Proposal 2(a) or 2(b). For titles in which the pressure encountered in the experiment is not explicitly stated, the word Pressure (or similar word such as Stress) would be subscripted to denote the magnitude of pressure. The subscript would be limited to one integer on each side of a decimal point and be the logarithm of maximum pressure obtained in bars; that is

".....Pressure<sub>4.0</sub>....."

corresponds to a maximum pressure of 10 kbar. The descriptive adjectives of pressure or stress would be left to the author's fancy, but it is suggested they be limited to high or very high.

A subscript was chosen to avoid conflict with the numerous superscripts already present in titles and abstracts. This notation could easily be extended to vacuum or temperature nomenclature by subscripting the appropriate words.