to selective adsorption was reported to occur at the oil/water interfaces[6].

I. A. SKUL'SKII
V. V. GLASMOV

Sechenov Institute of Evolutionary Physiology and Biochemistry,
U.S.S.R. Academy of Sciences,
Leningrad.

[1] Starik, I. E., and Skul'skii, I. A., *Izvest. Akad. Nauk S.S.S.R., Otdel. Chim. Nauk*, **10**, 1278 (1958).
[2] Starik, I. E., Skul'skii, I. A., and Tschebetkovskii, V. N., *Radiochimia*, **3**, 428 (1961).
[3] Starik, I. E., Tschebetkovskii, V. N., and Skul'skii, I. A., *Radiochimia*, **3**, 435 (1961).
[4] Starik, I. E., Tschebetkovskii, V. N., and Skul'skii, I. A., *Radiochimia*, **4**, 393 (1962).
[5] Janson, E. U., and Jevinsh, A. F., *Uspechi Chimii*, **27**, 980 (1959).
[6] Krtil, J., Fotjik, M., and Kyrš, M., *Coll. Czech. Chem. Commun.*, **27**, 2069 (1962).
[7] Burovina, I. V., Nesterov, V. P., and Fleishman, D. G., *Radiochimia*, **5**, 272 (1963).
[8] Ellison, A. H., and Zisman, W. A., *J. Phys. Chem.*, **58**, 260 (1954).
[9] Bunn, C. W., and Howells, E. R., *Nature*, **174**, 549 (1954).

Nomenclature of Metallic Elements

SINCE the discovery of the transuranic elements, a consistent method of naming the newly discovered metallic elements has been adopted. All these new elements have been given names ending in "-ium". It seems pertinent now that systematic changes are evident both in scientific nomenclature and in measuring units to discuss some aspects of the naming of metallic elements.

Of all the known metals, the following do not have names ending in "-ium":

Antimony	Lanthanum	Platinum
Bismuth	Lead	Silver
Cobalt	Manganese	Tantalum
Copper	Mercury	Tin
Gold	Molybdenum	Tungsten
Iron	Nickel	Zinc

Some effort is needed to introduce a revision of the names of the metallic elements in terms of the suitably consistent ending "-ium". Several degrees of consistency (least, moderate, and total) are now suggested.

Least consistency. In Europe, and perhaps in the United States, there is now little doubt that the name "niobium" is preferred to "columbium". Similarly, the name "aluminium" is accepted everywhere except in the United States. The names of the following four elements might be spelled with the "-ium" ending, introducing only the minimal amount of novelty: lanthanium; molybdenium; platinium; tantalium. These changes would dispose of the only four "-um" endings. Why this latter ending was first introduced when these four elements were discovered is not understood.

Moderate consistency. Several elements have consistent Latin names from which the chemical symbols for these elements are derived, an example being gold—Au(rium). However, the names of some metals are so well established that it would be almost pointless to change them, unless one insisted on total consistency. Examples of these are copper, silver, gold, iron, mercury, and tin. Nevertheless, it would seem a simple process to learn to accept the modified Latin names for antimony and lead, namely, "stibium" and "plumbium". For moderate consistency these changes plus the changes suggested for least consistency are desirable.

Total consistency. The following new names would be required if total consistency were mandatory:

Argentium	Cuprium	Nickelium
Aurium	Ferrium	Stannium
Bismuthium	Hydrargyrium	Tungstenium
Cobaltium	Manganium	Zincium

The element helium, a gas at normal temperature, has, with respect to the present discussion, an inconsistent ending to its name. The name "helion" is suggested as a replacement for its present confusing name.

It seems surprising that something so basic as the naming of the elements proceeded for so long without complete systematic care. In this scientific age it is time that the English-speaking scientists reached international agreement on the systematic naming of at least the metallic elements and perhaps all the chemical elements. This communication was written with the intention of provoking some thought and discussion on the subject.

This work was sponsored by the U.S. Atomic Energy Commission under contract with the Union Carbide Corporation.

A. WOLFENDEN

Metals and Ceramics Division,
Oak Ridge National Laboratory,
Oak Ridge, Tennessee.

BIOPHYSICS

Viscometry of Human Blood for Shear Rates of 0–100,000 sec^{-1}

Charm and Kurland[1] recently suggested that Casson's equation is applicable to the investigation of the viscosity of human blood for shear rates of 0–100,000 per sec.

I believe this statement to be only partially true. First, the physical interpretation given which supposes that the disaggregation of red cells proceeds in the range of rates of shear up to 100,000 per sec is quite wrong if the rates of shear refer to conditions in rotational viscometers. While some aggregates of red cells would be conceivable in axial flow in pipes (or vessels) even at very high rates of shear, the complete disaggregation[2] of red cells occurs already in the range of 10–60 sec^{-1} under conditions of homogeneous velocity gradient.

Any further decrease in the viscosity of blood, at progressively increasing rates of shear, is due not to the disaggregation of red cells, but to a gradual decrease in the internal viscosity of the red cell. Each red cell is in itself a complex rheological matter, both the interior and the membrane of the red cell forming a non-Newtonian system[3].

The viscosity of red cells, whether measured individually or as packed cells, will decrease progressively with increasing rates of shear. This phenomenon accounts for the experimental data and equations obtained by Charm and Kurland. In respect of rates of shear close to zero, from 0·001 to 10 per sec, the slope of the rheological curve (if correctly measured) is quite different from the one obtained at high rates of shear and is, indeed, due to the reversible aggregation of the red cells.

Although, by now, the statement of Charm and Kurland appears to be elaborated, other parameters unfortunately enter into the picture and make the final solution far from simple.

While the normal red cell (Hb AA), at its usual *p*H (about 7·4), will conform to the behaviour described, this is not necessarily true either for red cells containing abnormal haemoglobin or for red cells at abnormal (lower or higher) *p*H. A distinct possibility exists, although it has not yet been proved satisfactorily, that under some conditions the flowing blood might exhibit dilatant instead of thixotropic or shear-thinning properties.

In addition it is dangerous to deduce molecular or colloidal events from Casson's equation. The concept of critical yield stress might be especially misleading. It has been shown[4] that this concept has its place only as an arbitrary value. The critical yield stress is not a unique value of stress, but is a function of the time of application of this stress, and as such is represented by a curve if plotted as stress against time. A sensible (if arbitrary) concept of critical yield stress involves a state-