

temperature than natural anti-A and anti-B sera of lower titer.

On the other hand, we have encountered a number of anti-Rh sera which give reactions comparable to those of the common grouping sera. These rather exceptional sera were of high titer, and were relatively insensitive to temperature variations, the reactions in some cases being even sharper in the cold than at body temperature. Such sera give good clumping by the common slide technique, and this we believe to be due to their wide temperature range of action. In addition, it may be mentioned that in the first report on the role of the Rh factor in hemolytic transfusion reactions Wiener and Peters⁵ described post-transfusion sera which had the peculiarity that they reacted only in the cold.

In this connection, it would seem that agglutinins should be named according to their specificity rather than the optimum temperature at which they react. The recent tendency of some workers to designate autoagglutinins merely as cold agglutinins is therefore to be condemned. The term autoagglutinins is unambiguous and therefore should be retained, though if one wishes, one may use the expression "cold autoagglutinins" to indicate that the reactions are most distinct or occur only in the cold.

As already mentioned we believe that in addition to the special properties of the Rh antisera certain peculiarities of the agglutininogen may play a part in the nature of the reactions. Even with the most potent Rh antisera, in tests at body temperature, isohemolysis has rarely, if ever, been observed in the test-tube. Moreover, the Rh agglutination reactions are more easily reversed by shaking than in the case of the common grouping tests. Finally, only about 2 per cent. of Rh negative individuals respond to transfusions of Rh positive blood by the production of iso-antibodies, while A and B appear to be regularly antigenic in man. One of us (W)⁶ has previously suggested that the reason for this may be that Rh is a sub-surface antigen, while A and B may be located at the surface of the erythrocyte. Recent studies⁷ on the capacity of red-cell stromata to inhibit anti-Rh as well as anti-A and anti-B sera, indicate that a more likely explanation may be that there are far fewer Rh hapten groups than A and/or B hapten groups per erythrocyte. This hypothesis would account for

the peculiar *in vitro* behavior of the Rh tests as well as the apparently poor antigenic action of the Rh factors. If the hypothesis proves to be correct, then this would be a serious obstacle to attempts at extraction of large amounts of Rh antigen from human erythrocytes for clinical use.

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USE OF TERMS RELATING TO VEGETATION

PLANT-COVER data are commonly added to military maps for various theaters of war. Members of our armed forces in many countries quickly learn to distinguish hitherto strange types of vegetation, as they appear from the air as well as on the ground. Investigators of economic plants are rapidly adding to our knowledge of vegetation of Latin America. This recently increased awareness of vegetation is unprecedented. Suggestions toward accurate use of names for certain vegetation-types should be timely.

"Vegetative cover" is frequently used by many workers in applied ecology, by some geographers, and others. The only objection to it is the long-sanctioned use in biology of "vegetative" to contrast with "re-productive." Vegetative as applied to herbage or other plant cover thus introduces an irrelevancy. This is easily avoided by substituting "vegetation" or "plant cover." When an adjective derived from vegetation is desired, vegetational or the rather rare word "vegetal" may be used.

Terms such as prairie, meadow, savanna, woodland, scrub forest, evergreen forest, etc., convey distinctive impressions of appearance or physiognomy of vegetation, without commitment as to the plant species which make it up. Unfortunately the impressions are not the same for all persons, largely through limited knowledge of the history and applications of particular terms. Thus "savanna" was first applied to extensive grasslands in the West Indies, and is now most commonly so used there and in central and northern South America. In some of these savannas single trees or small clumps or groves of trees, or thickets of shrubs, occur. The proportion of area occupied by taller woody vegetation, and its composition, are highly variable. This accompaniment of savanna trees and shrubs, though incidental, has led some travelers or readers of travels to consider that savannas necessarily are tree-and-grass combinations, synonymous with "parkland." The primary significance of the grassland, by itself or serving as a matrix for trees, should be kept in mind. A two-phase vegetation should be named after both phases, as prairie with hazel thickets, or palm savanna (*i.e.*, savanna with palms). Tendencies to extend the term savanna to

⁵ A. S. Wiener and H. R. Peters, *Ann. Int. Med.*, 13: 2306, 1940.

⁶ A. S. Wiener, "Yearbook of Pathology and Immunology for 1941," p. 499.

⁷ A. S. Wiener and R. B. Belkin, unpublished observations. This effect would be exaggerated if the testing serum contains "blocking" antibodies (A. S. Wiener, *Proc. Soc. Exp. Biol. and Med.*, June, 1944), which would further reduce the number of sites available for attachment of anti-Rh agglutinins.

cover vegetation-types in higher latitudes or in very arid country should not be followed.

Another commonly misused word is *scrub*. Some have considered that a vegetation of shrubs is a scrub. This is true only if the shrubs are scrubby (in the usual connotation of sparse, dwarfed or malformed). Scrubby trees and scrubby bushes likewise are prevalent in certain areas. *Shrub*, as long advocated by Dr. H. L. Shantz, is a valid designation for cover made up of shrubs of normal stature and form. Scrub forest is composed of reduced and perhaps gnarled trees. Scrub woodland is an open cover of such trees.

Though a significant distinction between shrub and bush is not usually emphasized, it is frequently implied, and can be usefully employed, for vegetation as well as for growth-form of particular plant species. Most shrubs are larger than bushes, with relatively few, sizable, hard-wooded, long-lived stems. Bushes average smaller, with many stems which are slender. In many bushes the stems have large pith, little wood and are individually short-lived. Most Mediterranean maqui is evergreen shrub (with or without tree components in addition), whereas garrigue cover-types are chiefly bush (in the sense of bush vegetation). The corresponding American vegetation, sometimes called coastal sagebrush, might better be known as California bush, since it is far more extensive than the *Artemisia* species after which it was named and comprises over a hundred bush species.

There is considerable disagreement as to application of "chaparral." It has been used for a mixed shrub at the east front of the Rocky Mountains, for shrub of Nebraska sand hills, and for shrub mixtures in the eastern states. Texas botanists may rightly claim that mesquite shrub of the southwestern states has been called chaparral for nearly a century. (Chaparral of Texas is so defined in J. R. Bartlett's "Dictionary of Americanisms" in 1850.) But if so widely used, chaparral becomes merely a synonym of shrub vegetation. Several botanists have suggested that clarity will result if students of vegetation can agree to restrict the term to evergreen shrub. Most variants of this evergreen shrub are xerophytic rather than of types usually associated with forest. Chaparral is not limited to California nor to climates with rainfall only in winter; it occurs in its usual appearance but with fewer species, in mountains of Arizona, New Mexico and southwestern Colorado; and chaparral types with species of the usual genera occur in several parts of Mexico. If describers of deciduous shrub will refrain from calling it chaparral, the latter word can be usefully preserved. Mesquital or simply mesquite should be distinctive for Texas vegetation dominated by this one plant.

Attempts to visualize just what may be meant by

"jungle" in accounts by various authors, usually result in confusion. To some minds jungle is synonymous with tropical rain-forest of Asia and the East Indies or with any tropical forest. From its first meaning as "waste or uncultivated ground (= 'forest' in the original sense)" (Oxford Dictionary) it has come to be applied to a wide variety of vegetation-types: brushwood, long grass, any tangled vegetation, "low or thin forest" (J. C. Willis), primeval forest, secondary forest. Many foresters and botanists working in India use the term rarely or not at all. The clearest statement found is by T. W. Webber:¹ "Dr. Johnson defines a forest as a 'wild uncultivated tract of ground interspersed with trees.' . . . In India the term 'jungle' has a similarly wide and uncertain meaning, not necessarily implying trees any more than the Scotch 'deer forest,' but signifying a region where savage animals dwell, and where wild men exist." Current wide use of the phrase "jungle warfare" should not lead followers of the news into picturing any one type of vegetational setting for the fighting in Burma or New Guinea or islands of the western Pacific. When a particular kind of vegetation is to be described, the word "jungle" is of no value. Use of this term for regions other than Indomalaya should be avoided in writings on science.

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NOTES ON "A FLOWMETER FOR USE IN AIR SAMPLING PROCEDURES"

I HAVE read the article "A Flowmeter for Use in Air Sampling Procedures," by H. M. Lemon and H. Wise, in the issue of *SCIENCE* for January 14. Industrial hygienists have used similar flowmeters for several years, and in this laboratory we consider this type of device as very commonplace. In our classes in industrial air analysis we emphasize the importance of calibrating the flowmeter with the sampling device when the flowmeter is placed downstream. The use of the flowmeter downstream of the air sampler has decided advantages in fume and gas sampling where the resistance of the sampler remains constant, as it eliminates apparatus to be cleaned and a source of error. It is difficult to clean certain metal fumes from the flowmeter placed upstream even with highly corrosive acids because of the adhesiveness of the fume particles.

A commercial air-sampling instrument for carbon monoxide (M.S.A. CO. Indicator, manufactured by Mine Safety Appliances Company), which has been marketed for over fifteen years, has a simple flowmeter of this type preceding the dehydrating canister and absorption chambers. The change in resistance of the dehydrating canister with absorption of moisture therefore does not affect the calibration.

¹ "The Forests of Upper India," p. ix. London, 1902.