remains that, in general, it is not feasible to draw a line between "stream-cut" flood plains and incipient peneplains. Precise description clearly demands a technical term for degradational valley flats.

The writer proposes to restrict the use of the old Scottish word "strath" to this type of flat valley bottom. According to Geikie,[3] popular usage in Scotland applies the word "strath" to "broad expanses of low ground between bounding hills, usually traversed by one main stream and its tributaries." Little violence is done to this original use when the meaning of the word is restricted in a geomorphic sense to those cases in which the flat valley bottom is the result of degradation, first by lateral stream cutting and later by whatever additional processes of degradation may be involved.

At the initial stages of lateral stream cutting, the "strath" is *incomplete,* that is, present only here and there along the valley bottom. Progressive widening renders it *complete,* a broad band of lowland between more or less parallel valley sides.[4]

The justification of this technical restriction of the word "strath" lies in the way it lends itself to the building up of a consistent nomenclature as follows.

In the course of its natural development, a *V-valley*[5] changes into a *strath-valley,* at first with an *incomplete,* then with a *complete strath.*

Rejuvenation leaves remnants of such flat valley bottoms as "terraces." Corresponding to the two types of flat valley floors we have, then, *strath terraces* and *fill terraces,* the latter comprising *alluvial terraces, glacial terraces,* etc.

To the two main types must be added a third,[6] for which the old term *rock terraces* serves well in its original meaning, which refers to ledges on valley sides brought into relief by the superior resistance to weathering of individual rock units.

Stone,[7] Stout[8] and others have used the word "strath" for what the writer proposes to call "strath-terraces." This use of the term has not been accepted widely. Since the writers who have used the term have defined the meaning in which they use it in their publications, there would be no danger of confusion if students of geomorphology should choose to adopt the writer's definition of the term here proposed.

At the mouths of river valleys strath terraces merge into wave-cut terraces. The two are by no means identical and require each a separate, specific name. Collectively they might be called "berms." Unfortunately, this word can not be used in a purely figurative sense since it is practically unknown to most readers. It would necessarily assume the character of a technical term. It is briefer to say "berms grade into partial peneplains" than to say "strath terraces and wave-cut terraces merge into partial peneplains." But it is not any more precise and therefore not necessary to do so. Every addition of a technical term which requires specialized knowledge of nomenclature interferes with the ready understanding of scientific writings by the less specialized reader. If it does not add to precision one might do better to omit a technical term, even though it be as aptly chosen as the term "berm" which, in civil engineering parlance, signifies "a horizontal ledge part way up a slope."

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[3] A. Geikie, "The Scenery of Scotland," 3rd Edition, London, 1901, p. 175.

[4] For the latter case Rich has suggested the term "open valley." J. L. Rich, "Certain Types of Stream Valleys and Their Meaning," *Jour. Geol.,* 22: 469–470, 1914. Dr. Rich agrees to this definition of his term, withdrawing the qualification given in the last paragraph of p. 470.

[5] In technical language we speak of I-beams and T-beams, not of I-shaped and T-shaped beams. It is convenient (not necessary, of course) to speak of V-valleys.

[6] The writer has used these terms for a number of years with his students in the field and classroom and has found their symmetry very useful.

[7] R. W. Stone, "Review of General Geology of Southwestern Pennsylvania in Light of Recent Work," Top. and Geol. Surv. Pennsylvania, 1906–08: 121 ("These benches represent the periods when uplift ceased and the streams had opportunity to widen their valley floors, and the bluffs represent periods of elevation. These later benches are known as 'straths' ". . .)

[8] W. Stout and R. E. Lamborn, "Geology of Columbiana County," Bull. Geol. Sur. Ohio, 28: 41, 1924. ("Strath, a remnant of an old valley," in footnote.) W. Stout, "Geology of Vinton County" *ibid.,* 31: 38, 1927.

OESTRUS

BY his masterly letter on the history of the word "œstrum," Dr. Tyson has justly rebuked me for my somewhat frivolous letter published on March 27.

The point is one of more than passing interest, for it involves the question of the exactness of scientific terminology. A word in general use varies from time to time both in its form and in its meaning. But a scientific term expressly adopted to convey a definite conception should, so long as it does not infringe the laws of priority and of good taste, remain inviolate. Naturally, if the conception itself becomes superseded, the term itself must pass out of use and may be adopted, preferably with some suitable alteration, with a new definition. A recent example of such a change is to be found in the alteration of the older term "lipoid" to the newer "lipid" and its variations, all of which are defined as accurately as our present knowledge of biochemistry allows.

With regard to the word "œstrum," if Dr. Tyson refers to the paper (*Quart. J. Micros. Sci.,* 1900–1,

Vol. 44; see pp. 6–7) in which Heape introduced the terminology under discussion, he will find that the specific point has already been settled. Heape wished to introduce well-defined terms which would differentiate the phases of the reproductive cycle in mammals. Before giving his own choice, he discusses several alternatives, amongst them being the neuter word "œstrum." He rejects this because it already has a meaning in general use which is considerably wider than that which he desires to convey. He therefore takes the Latin word "oestrus" and gives it a clear definition, thereby introducing it as a scientific term. It seems clear, therefore, that there is very good reason for using the scientific term introduced by Heape and not the variant from general usage with a more indefinite meaning.

I feel that there is another reason why we should attempt to respect Heape's terminology, for it is said that to define a problem clearly is half the battle. Heape certainly did this for us and has thus paved the way for recent work on sex hormones which is producing such excellent results, especially in this country.

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BOUGHS, BUTTS AND BEAVER DAMS

IN SCIENCE for December 18, 1931, Mr. Charles Macnamara writes of certain beaver dams he had observed in which "at least 90 per cent." of the boughs had been placed with butt ends *downstream,* instead of upstream, as generally stated in published accounts of the beaver.

There is no question as to the accuracy of Macnamara's observations. On the contrary, as one who long has been an interested observer of the beaver and its works I am quite in agreement with him and feel that many who have written about the beaver, myself included, have, perhaps, when making generalized statements, rather unduly emphasized the position of the boughs in beaver dams. That the butt-end-upstream feature should have been singled out for special mention is probably of psychological interest only, but aside from the question of their accuracy as generalizations such statements tend to create the erroneous impression that this particular position of the boughs is a matter of design on the part of the beaver. Whatever the position of the boughs in a dam the explanation can usually be found, I think, in the conditions confronting the beaver where it is working; and some, at least, of the determining factors are fairly obvious, as, for example, the character of the stream when the dam is first started; the site of the dam and its location with reference to where the beaver gets its boughs; the route taken by the animal (sometimes forced upon it by the terrain) in transporting the boughs to the dam, and other factors.

To illustrate: The position of the boughs is, I believe, most likely to attract attention in dams that have recently been started, especially in such as contain many boughs that are fresh-cut and untrimmed and therefore particularly conspicuous. It is a matter of common observation in beaver country that many dams are started on small or shallow streams that at the time do not permit of transportation of dam materials by water; such transportation becomes possible only as construction proceeds and sufficient water becomes impounded. If, now, the beaver secures most of its boughs at points above the dam site and drags them by way of the creek bed to the dam, most of these boughs will be found on the dam with their butt ends downstream; but if most of the boughs are brought from points below the dam, then they will be found with butt ends upstream. However, many boughs may also be secured off to one side or the other of the dam and, depending in part upon the direction from which the immediate approach to the dam is made, may be found lying crosswise, diagonally or in a variety of other positions.

As the pond enlarges the beaver will very probably bring in most of the boughs from points above the dam, transporting them now by the favored water route, and hence from this time on most of the boughs will doubtless be found, when in place, with butt ends directed downstream.

If any general statement is to be made in regard to the position of the boughs in beaver dams, rather than making any reference to the direction in which the butts are pointing it might be safer merely to say that most of the boughs lie parallel with the stream or the direction of the flow.

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TWISTED TREES

A BRIEF note, under the above caption, by Dr. A. R. Cahn, of the University of Illinois, appeared in SCIENCE several months ago (May 23). In it Dr. Cahn recorded his observations in Ontario, Canada, of evergreen trees having twisted bark and wood. Noting that the twist, in the trees observed, was predominantly to the right, he wondered why this was so. In a letter to Dr. Cahn on June 1 the following explanation was offered.

When a tree is exposed to the wind year after year, it assumes an oval shape, when considered in horizontal cross-section through the leafy portion of the tree. The trunk would be off-center on the side toward the direction of the wind. If the prevailing wind shifts from left to right consistently in the area in which the tree is located, it would seem that there would be