DISCUSSION

RELATIVE TO THE EXPRESSION "LINE CONTOUR"

ONE reads frequently in the current literature of spectroscopy of "line contours," the intended meaning of the term being, apparently, the intensity graph taken across a spectral line, or, in other words, a small part of the spectral energy curve in the immediate vicinity of the "line" or radiation in question. Inasmuch as technical usage, especially in engineering practice, has endowed the term "contour" with a special connotation of sustained equality, as, for example, in its specific application to lines of equal elevation on a topographic map, the use of the term to designate precisely *what this is not* would appear to be unfortunate.

The word has of course, in general speech, a wide meaning which is not subject to the limitations imposed by technical usage. Thus the Century Dictionary quotes Dr. Oliver Wendell Holmes in illustration: "All her contours and all her movements betrayed a fine muscular development." There is here no implication that horizontal curves only are to be considered, in fact the imagination is left free to engage itself with deflections in all directions, and it would appear permissible to speak metaphorically of the contour of a spectral line in much the same way that we refer directly to that of a body or of a feature of the landscape; but such greater latitude in the meaning of the word when employed in general speech can hardly be taken to justify its technical, and presumably exact, restriction to uses in two conflicting senses. It would seem necessary for the spectroscopist to respect the unquestionable priority of the engineer.

If we were to take over, for the description of a spectral line, the term "contour" in its engineering sense, the "contours" would be points, since the energy curve has but one horizontal dimension. The term "profile" might be appropriated with perfect consistency, since it relates to a vertical section, whose purpose is to show differences in level, and the word has in fact been drafted by Italian spectroscopists (*e.g.*, "Sul profilo del tripletto del magnesio," etc. Publ. della R. Univ. degli studi di Firenze, 48; 28, 1931). A number of other expressions are available, but the actual employment of the term "profile" in one and perhaps more of the principal languages would suggest the propriety of its use in English.

One may perhaps be permitted the reflection that a generation ago the word "contour" would probably not have been adopted by physicists or astronomers to signify something that goes up and down. The apparent readiness with which it is being accepted is perhaps illustrative of the drift of physical science from the influence of engineering, obvious to most of us, and recently remarked by Sir James Jeans ("The Mysterious Universe," p. 19). Is it too late for spectroscopists to select an expression for a simple intensity graph that would conform, or at least not be in conflict, with simple and well-established usage?

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"STRATH" AS A GEOMORPHIC TERM

IN a recent number of SCIENCE, (August 14, 1931, pp. 172–173) F. Bascom proposes the word "berm" as a collective term. It is to include all terraces in stream valleys and on lake and sea shores which owe their origin to relative uplift and dissection of planation surfaces; lateral planation by streams on the one hand and planation by waves on the other.

The purpose of this note is to call attention to an anomalous circumstance. Applying the word "berm" to stream valleys is giving a name to the erosion remnant of a geomorphic feature for which in its original, uneroded condition no technical term exists. The flat bottom of a stream valley produced by degradation has no technical name to distinguish it from one produced by aggradation.

For the lowland which commonly adjoins the low-water channel (or "bed") of a stream we have the word "flood plain." But, as used, this word includes both lowlands formed by cutting away and by filling up ("degradational" and "aggradational" surfaces). The two might be distinguished as "stream-cut"[1] and "stream-filled" flood plains.[2] The latter expression is identical with "alluvial plain" and is therefore not needed. The former, on the other hand, would be inadequate. "Stream-cut flood plains" grade imperceptibly into flat valley bottoms of greater width, often spoken of as "incipient peneplains." These can not have been formed solely by lateral stream-cutting. They may owe their origin to a weathering back of the valley walls after the fashion of other erosion scarps. In fact, the writer knows of no reason why the same process that causes an erosion escarpment to retreat, with no stream running along its foot, should not also produce a recession of valley walls. Whether this inference be justified or not, the fact

[1] Disregarding the veneer of gravel and mud which inevitably covers a stream-cut flood plain.

[2] "Aggraded valley-plain" of C. A. Cotton, who defines "valley-plain" as "a continuous flood-plain." ("Geomorphology of New Zealand," Wellington, N. Z., 1926. Pp. 113 and 197).

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,