The forest succession comprises small scattered trees of the three species—*Cupressus pigmya, Pinus muricata* and *Pinus contorta.* The first of these is the dominant one, though the last one shows occasional larger individuals (30 feet or more tall). Young specimens of the dominant tree (3 feet or less in height) are as abundant as the older ones (20 feet or more in height).

The plant community surrounding this bog is a scrubby forest of small trees (mostly 40 feet or less in height) forming a dense growth. It is largely *Cupressus pigmya,* but there is some *Pinus contorta* and an occasional specimen of *Pinus muricata.* The shrubby undergrowth in this forest is largely *Myrica californica, Ledum columbianum* and *Gaultheria shallon.* The first two of these grow much taller in the forest than in the bog. Herbs occurring in both forest and bog are *Lilium maritimum* and *Gentiana* sp. This forest forms a belt about two miles wide on the level stretch of Mendocino sand. Back of this is the redwood forest on good soil.

Borings made in this bog near the origin of the creek show three strata of peat. (a) A surface layer of living sphagnum, under which is dead sphagnum, little disintegrated and much mixed with roots of *Ledum* and *Carex.* This layer of living and dead sphagnum is mostly 12 to 18 inches deep. (b) A layer of sedge peat with many small roots and some wood. The depth of this layer is mostly 1.5 to 2 feet. (c) A mixed layer of mud clay, sand and wood about 4 feet deep. The wood in this layer, like that in (b), is in a fairly good state of preservation. The boundaries between these layers are not very distinct. The borings were made with a Davis peat borer, and the large amount of wood encountered made sampling very difficult.

Evidently this bog has been formed in a relatively flat, shallow ravine by a dense growth of sedges and other swamp vegetation on the accumulated mud, sand, clay and remains of woody plants. The sphagnum is a comparatively recent invader. Drainage in this bog is better than that in most Pacific Coast bogs and this may account in part for its lack of maturity.

Fort Bragg has wet winters and dry summers. The average monthly and annual precipitation in inches (37 years' record) is as follows: January, 7.71; February, 6.89; March, 4.89; April 2.45; May, 1.49; June, 0.42; July, 0.08; August, 0.04; September 0.81; October, 1.80; November, 5.01; December, 6.11; annual, 37.70. The only snow reported during the last 17 years is 1.0 inch in January, 1923. No temperature data are available for Fort Bragg, but the 45 years' record at Eureka to the northward shows an average of 51.40° F. and the 41 years' record of Pt. Reyes of 52.5° F. The monthly data for Eureka are as follows:

	Jan.	Feb.	Mar.	Apr.	May
Average ...	47.1	47.6	48.4	50.0	52.2
Highest ...	77	85	78	79	78
Lowest	20	24	29	31	35

June	July	Aug.	Sept.	Oct.	Nov.	Dec.
54.5	55.7	56.2	55.7	53.6	51.1	47.8
85	76	79	82	84	81	70
40	43	45	36	35	27	24

The maximum recorded at Pt. Reyes is 98° (September) and the minimum 30° (March). All the above data were furnished by the U. S. Weather Bureau office at San Francisco.

The character of this bog is of interest in the general problem of the occurrence and course of development of sphagnum bogs along the North Pacific Coast of America. It is reported that sphagnum forms considerable growths at various points in the forests of the coast of northern California, but detailed information about bogs formed by it is not available. This bog has much in common with the coastal bogs of Oregon, though it has not reached the somewhat mature stage shown by many of the Oregon bogs. Its forest succession resembles that in bogs of Oregon and Washington in including *Pinus contorta* but differs strikingly from them in the occurrence of *Cupressus pigmya.* The climatic conditions under which it has developed do not differ greatly from those under which the bogs of Western Oregon and Washington have developed.

The writer made his study of this bog on August 26, 1931. His first information in regard to it was received from Mr. W. G. Corbitt, and valued assistance in its study was given by Mr. V. B. Davis. He will welcome further information in regard to the occurrence of sphagnum areas in California.

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SEDIMENTATION AND SEDIMENTOLOGY

THE terms "sedimentology" and "sedimentation" are subjects of comment by W. H. Twenhofel in the *Bulletin of the National Research Council,* Report of the Committee on Sedimentation, 1930–1932, p. 18. Dr. Twenhofel considers the terms "sedimentation" and "sedimentationist" as more fitting designations than "sedimentology" and "sedimentologist" for "the range of geologic processes concerned in the formation of the sedimentary rocks" and for "a student of sediments," respectively. He rejects "sedimentology" because it contains "roots from two languages."

The choice of terms is perhaps not of great importance for the present. It has seemed advisable, however, to reconsider the question, because, whatever term is now adopted, it will be difficult to change when once entrenched in the literature.

First, a minor correction of Dr. Twenhofel's statement is needed. In my article "Sedimentation and Sedimentology," in SCIENCE of January 1, 1932, "sedimentology" was not proposed as a designation for "the range of geologic processes concerned in the formation of the sedimentary rocks," but as a designation for the subject concerned with these processes.

The term "sedimentology" had previously been so rarely used in geological literature (3 or 4 times), that I believe most geologists were not aware of its existence. After my article appeared in SCIENCE in January, 1932, I learned that the term "sedimentology" was first introduced some ten years ago by Dr. A. C. Trowbridge, who, in "American Men of Science," has listed sedimentology as one of his major subjects.

Etymologically hybrid formations are not uncommon. In my earlier article in SCIENCE, glaciology was mentioned as an analogy to sedimentology. "Sociology," "vulcanology" and "stratigraphy" are hybrid formations which in the past have been used without objection. Since "terminology" itself is a Latin-Greek formation, there seems to be no reason for disqualifying the term "sedimentology," especially since the latter, in the interest of non-ambiguity and logical consistency, is superior to "sedimentation" as a term for the subject. Hybrid formations are also frequently found in the German language, which permits such combinations as *Sedimentgesteine, Sedimentpetrographie,"* etc.

All standard dictionaries state that sedimentation is an act or process of depositing sediments. The use of the term "sedimentation" also for the subject concerned with processes of sedimentation and formation of sediments, ancient or recent, is a violation of the principle of non-ambiguity, and is therefore more objectional than the use of a hybrid formation. There is a distinct difference between the glaciation of North America and the glaciology of North America, or better, the glaciation of Greenland and the glaciology of Greenland. In analogous manner, differentiation should be made, for instance, between the sedimentation of the Mexican Gulf and the sedimentology of the Mexican Gulf.

The choice between "sedimentologist" and "sedimentationist" as designations for a student of sediments is not entirely a matter of taste. The terms "Vulcanist" and "Neptunist" designate two old schools of geologists, *i.e.,* these terms signify advocates or assertors of certain theories rather than students of certain subjects. The sole ending *-ist* does not always signify a student or one versed in a particular subject. There is generally a difference between a socialist and sociologist, a symbolist and symbologist, an idealist and ideologist. Generally, the ending *-logy* signifies a theoretical, scientific, analytical, philosophical study, and the ending *-logist* usually denotes a student or one versed in the subject.

Another objection to "sedimentation" is that it does not readily permit the formation of derivatives corresponding to "sedimentologic" and "sedimentological." These adjectives are useful for such expressions as "sedimentological (or "sedimentologic") research," "sedimentological investigations," "sedimentological theories," etc.

In conclusion, retention of "sedimentation" for the act or process of deposition of sediments, and adoption of "sedimentology" as a term for the subject concerned with these processes will tend toward clearness. A new term entirely of Greek composition is not likely to be accepted.

"Sedimentography" is herewith introduced as an additional term signifying the descriptive branch of sedimentology, *i.e.,* that part which deals with the minute phases, megascopic and microscopic features, textures and classification.

HAKON WADELL

MECHANICISM, VITALISM AND THE GROWTH OF BACTERIA

MUCH has been written about the chemical nature of growth, and in this connection unicellular and higher cold-blooded organisms have received especial attention. The fact that the rate of growth, metabolism and activity of such organisms increases with a rise of temperature, to the optimum, in a similar manner to the thermal acceleration of a chemical reaction, has justly received emphasis.

It is not the intention of this note to detract from the progress which has been made toward the explanation of life processes on purely physical and chemical bases. Least of all would we wish it to be considered as a partisan contribution to that threadbare discussion of "vitalism" and "mechanism." After all, it is probable that most of the functions of living matter which can not now be accounted for physically or chemically are obscure simply because of the deficiencies in our scientific conceptions.

Bacterium coli grows actively at 45° C. and also at 10° C., the rate of reproduction being about thirty times as fast at the higher temperature. It is known that actively growing bacteria continue to grow at the same rate when transferred to sterile medium of the same composition. On purely chemical grounds one would expect that if a transfer were made from an actively growing culture at 10° C. to sterile medium of the same composition at 45° C., growth should immediately be accelerated to the rate characteristic of a culture growing at this temperature. This, however,