there had been more recent upheavals. Conversely, terraces up to about 200 feet above sea-level may have been cut by waves during interglacial epochs, due to a rise in sea-level accompanying melting of the Antarctic ice sheets.[2] Accordingly, it seems probable that most coasts which have been relatively free from Quaternary diastrophism should possess these common characteristics of both submergence and emergence.

Deep inlets along glaciated coasts: Fiords along mountainous coasts have been considered by most physiographers to be the product of glacial erosion,[3] but the deep inlets along hilly glaciated coasts are generally referred to as drowned valleys. Since these estuaries have depths in excess of any submergence which can be properly applied to post-glacial rise in sea-level, they might be evidence of real sinking of the land. There are, however, several reasons for doubting such evidence. These deep inlets are almost entirely lacking, except along glaciated coasts; their submerged portions are closely related in character to typical glacial fiords; and the adjacent coasts have strong evidence of post-glacial uplift of large amounts.

Submarine valleys and high terraces: Still greater confusion in the classification of coasts as submerged or elevated comes from the study of what appear to be wave-cut terraces hundreds of feet above sea-level and of submarine valleys thousands of feet deep.[4] Finding either the one or the other would be supposed to show definitely whether the coast had emerged or submerged. The difficulty lies in the discovery of both phenomena along many coasts. Geologists have claimed that there are high terraces along practically all coasts, and the charts show evidence of submarine valleys thousands of feet deep off most of the coasts of the world. If the high terraces were actually cut by the waves and if the deep submarine valleys were cut by rivers, it must mean that coasts have been very unstable and have been subject to great uplifts and depressions.[5] Before concluding that a coast has emerged or submerged on the basis of these two phenomena one should be sure either that only one or the other is to be found or that one process clearly anteceded the other and that evidence for the wave-cut terraces or the river-cut valleys is substantial.

Deep ocean floors: It is only in recent years that profiles have been made across the oceans with sufficient soundings to make it possible to judge the character of the ocean floor. The numerous transoceanic profiles made by the United States Navy and Coast Survey and by the German ship *Meteor,* all made by echo soundings, show that plains on the ocean floor are unusual and that irregular topography is much more common. The minor irregularities comparable to small erosional features on land may not exist, except on the continental slopes, but it seems probable that there are more major irregularities and less monotonously flat areas than on the continents.

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[2] C. W. Cooke, "Correlation of Coastal Terraces," *Jour. Geol.,* 38: 577–589, 1930. The tracing of terraces along the coasts at approximately the same level is questioned by some geologists.

[3] For a refutation of the proposed fault origin of fiords see D. W. Johnson, SCIENCE, n. s., 41: 537–543, 1915.

[4] Some writers have questioned whether the deep submarine valleys, like that off the Hudson, were cut by rivers, but recent surveys have shown that many of these features have river valley characteristics. See "Submarine Valleys" (*Geog. Review,* 22: 77–89, 1933) for a discussion of the various hypotheses.

[5] The large vertical range appears to exclude the possibility of these changes being due to fluctuations of sea-level during glaciation and deglaciation. The uniform levels of the continental shelves suggest that there has been a long period of stability since any great uplifts and sinkings such as may account for high terraces and deep submarine valleys.

FALSE REMEDIES FOR CARBON MONOXIDE ASPHYXIA

MANY investigators now misconceive the physiology of carbon monoxide asphyxia. Because of these misconceptions they suggest drugs that they believe should be cures or at least helpful. The drugs suggested fall into one or both of two classes: (1) Those that might assist the respiratory ferment of the tissues, and (2) drugs stimulating respiration.

The affinity of the respiratory ferment for carbon monoxide was found by Warburg to be very much weaker than that of hemoglobin. Even in an atmosphere of carbon monoxide deadly for man, only a negligible amount of combination with the respiratory ferment occurs. Substances like methylene blue can aid the respiratory ferment only in isolated tissues. When introduced into the living body they convert hemoglobin into methemoglobin, and render an additional fraction of the blood inactive for oxygen transportation. Such substances are synergists, not antidotes, of carbon monoxide.[1]

The drugs of the second type that have been exploited in recent years are chiefly alpha lobeline and methylene blue. They are respiratory stimulants: a class of drugs that is so large that out of it numerous additional investigators could each suggest his own "cure for carbon monoxide asphyxia." Of course an animal or man asphyxiated to the point of failing respiration shows an immediate apparently beneficial effect from such a drug. Respiration is temporarily augmented. The proper object in such cases is, however, not a pharmacological demonstration, but a

[1] H. W. Haggard and L. A. Greenberg, "Methylene Blue: A Synergist, not an Antidote, for Carbon Monoxide," *Journal of American Medical Association,* 100: 2001–2003, 1933.

physiological restoration to health. No lives can be saved by such drugs that would not be saved merely by artificial respiration. Artificial respiration is harmless, in contrast to the ill effects of some of these drugs upon the heart. The only drug that can displace carbon monoxide from the blood, and replace it with oxygen, is oxygen. The only drug that can replace the carbon dioxide that the blood and tissues have lost, and recall the blood alkali into use in normal amount, is carbon dioxide. Carbon dioxide is also nature's own respiratory stimulant.

The treatment now used by the rescue crews of fire and police departments and of city gas and electric companies has demonstrated its effectiveness.[2] It consists of the inhalation of oxygen and 7 to 10 per cent. carbon dioxide. Unless the heart or brain is already severely damaged, resuscitation is almost always achieved. Many hundred inhalators for this purpose are now in use and are saving thousands of lives. The newspapers persist in calling these inhalators by the name of a discarded mechanical appliance, the "pulmotor." Every case of asphyxiation that recovers after a hypodermic injection of some drug is heralded as a brilliant cure. The victim would probably have recovered, and would certainly have felt much better next day, without the injection. Hypodermic medication in asphyxia is harmful rather than beneficial.

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CHROMOSOME NUMBERS IN FLAX (LINUM)

ACCORDING to Tine Tammes, of the University of Groningen, The Netherlands, common flax, *Linum usitatissimum,* has 15 chromosomes (haploid), as has also *L. angustifolium,* a species native to southern Europe and which may be crossed readily with the cultivated flaxes. M. Kikuchi, of Japan, found 9 chromosomes (haploid) in *L. perenne* of Europe and in *L. lewissi* of North America. The writer is indebted to Dr. A. E. Longley, Division of Genetics and Biophysics, Bureau of Plant Industry, U. S. Department of Agriculture, for the determination of the number of chromosomes in five additional species and varieties of Linum, as follows:

Linum rigidum Pursh. (Mandan, N. Dak.)	15 chromosomes (haploid)	
L. sulcatum Riddell (Mandan, N. Dak.)	15 chromosomes (haploid)	
L. perenne Asiaticum (Caspian Sea plains)	9	do
Flax, Hoshangabad (India)	15	do
Flax, Bison (N. Dak. Agr. Exp. Sta.)	15	do

It is noteworthy that the two species, *L. rigidum* and *L. sulcatum,* which are very different from common flax, have, however, the same chromosome number as *L. usitatissimum.*

The variety Hoshangabad, C. I. 40, was obtained in February, 1914, from the Central Provinces, India, and later as Indian Type 1, from Gabrielle L. C. Howard, formerly second imperial botanist for India. It also was obtained from Luther Burbank in February, 1918, under the name "Burbank Flax." This variety has very large yellow seeds and pale pink flowers. Bison is a new wilt-resistant variety of seed flax developed by the North Dakota Agricultural Experiment Station.

This note is reported so that Dr. A. E. Longley may have credit for these additional chromosome determinations.

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DANTE'S BONES

DANTE ALIGHIERI died in 1321 and was interred at Ravenna. Despite some vicissitudes, the bones of the poet seem to have been sufficiently cared for and kept marked. On the occasion of the 600th anniversary of Dante's death his tomb was opened and the bones committed for study to the care of Professor F. Frassetto, who with Giuseppe Sergi published a note on them in 1923. The definitive report has recently been published by Frassetto in a quarto of 205 pages with 95 figures. The cranium (without the lower jaw and teeth) is in excellent preservation and has been most exhaustively measured. The outline of the skull has been superimposed upon various extant busts of Dante. The fit is generally good except in the forehead; but then the existing portraits of Dante do not agree with each other and the fit with the Vela bust is excellent in all respects. The sumptuous volume can be obtained of Frassetto, University of Bologna, price bound ("di lusso, in pergamena") at L. 160.

C. B. D.

SCIENTIFIC BOOKS

RABER'S PLANT PHYSIOLOGY

CONGRATULATIONS are due any biologist when his book requires a second edition within five years; and further congratulations should be offered him when the second edition is such a marked improvement over the first.

Both of these statements apply to "The Principles of Plant Physiology" (The Macmillan Company,

[2] Y. Henderson, "Fundamentals of Asphyxia," *Journal of American Medical Association,* 101: 261–266, 1933.