

PLAIN GEOLOGY

BY

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Some years ago I spoke to an audience of mining men on the subject of plain writing. My talk was an appeal for the simple and direct statement of scientific thought in popular language; but that appeal was addressed to consumers of geological literature, and I should probably do better to make a similar appeal to some of the producers of geological literature.

Geology has of late been presented to the public in so many new aspects—commercial, military, political, and even legal—that he would be bold who would add to its modern varieties; therefore I ask here only a return to a primitive type, and my topic is “Plain Geology.” I am convinced that, at its best, science is simple—that the simplest arrangement of facts that sets forth the truth best deserves the term scientific. So the geology I plead for is that which states facts in plain words—in language understood by the many rather than only by the few. Plain geology needs little defining, and I may state my case best by trying to set forth the reasons why we have strayed so far away from the simple type.

First of all, I suppose we may as well admit a certain liking for the sound of words, and the longer the word the more sound it has. Especially enjoyable is this mild form of hypnotism if both ideas and words are such as to make us feel that we are moving in the highest circles. At the meeting of the British Association this year one physicist

This brings me to a third reason for our use of highly technical language; we too often try to overdress our thoughts. Just as there is a somewhat prevalent notion that clothes make the man, so we subconsciously believe that words make the idea. We follow the precept, “To be scientific, use scientific terms,” and in so doing we deceive ourselves. I do not wish to be unduly autobiographic in this analysis, but to show my true sympathy for those whose practices I denounce, I confess that I, too, have had the unhappy experience of stripping the technical words from what looked like a good-sized geological deduction only to find that the naked idea was rather small and not my own. It is also a common experience to make the sad discovery that a piece of involved and obscure writing is simply the product of roundabout reasoning or twisted thinking. Our own words fool us, and unconsciously we cover up with long words or tangled rhetoric our lack of plain thinking.

In picking my samples of the wordy sins of scientists, I naturally turn to the writings of my associates on the United States Geological Survey, not because they are the worst offenders but because they are sinners with whom I am best acquainted. Some of these writers, after setting down a technical phrase, realize the need of reaching their readers with words more easily understood and so translate their own scientific terminology on the spot; for example, one good geologist refers to “disseminated grains scattered through the rock,” and another addresses the two parts of his audience with this sentence, “Disintegration is slow in these rocks, and they do not break up rapidly.” Disseminated and disintegration are words that please every ear, trained or untrained, while the garden variety of mind is helped along by the plain words scattered and break up. It seems that in our hunt for general principles we feel the need of tagging each observed fact with some word that may connect it with the language in which the great fundamental laws of the universe are proclaimed at the seats of learning. For this reason—I prefer to suggest no other—a Survey author refers to cracks and crevices in rocks as spaces of discontinuity.

I remember a long sentence in the manuscript of a report on a western coal field in which the fairly common fact that shale is softer than sandstone was stated with full acknowledgments to differential erosion and due respect for the physiographic cycle, terms very comforting to the graduate student at our greater universities, but not at all useful to the practical man trying to open up a coal mine in Montana.

It takes years for some geologists to break the fetters of this scholastic habit of using big words for small ideas. Probably every one of us has been guilty of sentences like the following, which appeared in a Survey manuscript. “The argillaceous character of the formation is very prominent in some localities, although it is usually subsidiary to the arenaceous phase.” On being translated this means: At some places the formation includes considerable clay, but generally it is made up chiefly of sand.

In our writing I believe, however, we are tending to write more plainly—to say sand instead of arenaceous deposit, clay instead of argillaceous stratum, close folding instead of intense plication, river banks instead of riparian borders, mouth instead of debouchure, shore instead of littoral margin, and the overlying bed is limestone instead of the superincumbent material consists of a stratum of calcareous composition.

I even hope the day may come when more of us will say beds instead of strata, for the context usually shows that we are talking about rocks, not about furniture. I, too, love the sound of strata, but all the pleasure I get from it is wholly lost when those who strive to copy our learning speak of stratas. As a measure of our progress, I may quote from a Survey author of an earlier day, who referred to “autogenous hydrography on a vertically heterogeneous terrane”—truly a nut of a thought, which I’ll not try to crack, lest I find it all shell. It was a Survey graduate, I believe, who defined form value as “an intangible quality expressing the broad applicability of the energy form in

contrast to its theoretical thermal value as commonly expressed in B. T. U.” Words fail me, either to translate that definition or to describe it, though I may apply to such language a few words used in another connection by a Survey writer: “This holds the promise of large potential possibilities.”

But I do not wish to claim for the Federal Survey any monopoly in learned writing. It was one outside of our fold who urged me to use plain language at a meeting where we were both on the program. I tried to follow his excellent advice, but in his own address before a mixed audience listened with rapt attention to sentences like this: “So now every legitimate evidence of fact and deduction points to the origin of microbic unicellular life in the moist, subaerated soil away from the direct sun; and the soils of today are alive—a mighty host—with such microbic creations existing under paranerobic conditions.” Before such words I realized that I, too, was a layman, for what I heard was, in the words of the speaker, “difficultly intelligible,” if, indeed, I might not appropriately adapt to my use other sounding words in the same address and frankly confess that such language “outstripped the early promise of my cephalic ganglia and left me hopelessly decephalized.”

Technical terms have their places, and I am on record as admitting that exact scientific statement needs special terms, words that best keep their razor edge when used only for hairsplitting distinctions. This limited use of a highly specialized terminology is wholly defensible, for it would be folly to throw away tools so well-fitted for special purposes, just as it is unwise to put them to everyday uses with everyday people. Transubstantiation, transpiration, and transgression are technical words that are useful enough to the professional theologian, biologist, and geologist, but they are code words that must be decoded before others can understand them. We know that a telegraphic code saves words for those who use it, but it also most effectively conceals information from the uninitiated.

I have a very definite purpose in this appeal for plain geology that a larger part of our people can understand. Today our science has more contacts with life than ever before: industry has taken geology into partnership, and engineers and capitalists and statesmen all look to geologists for advice. This greater demand has called to the ranks many with varying degrees of professional incompetence, a polite phrase by which I mean in plain English that some who call themselves geologists are knaves, others are fools, and yet others are hybrids. Now, the universal camouflage of the fake geologist—whether of the untaught or uncaught variety—is his protective coloring of technical words. To his clients or his dupes who are weak in geological knowledge these long and unusual words are impressive and serve his purpose, but to those who have had the advantage of special training and experience his use of geologic terms at once exposes his true character.

Indeed, this is the basis of the practical test that some of us apply to the report in an oil prospectus if, as so commonly happens, we have never heard of the so-called "well-known authority on the geology of the greatest oil fields of the world." Such an expert uses all the latest terms, but he mixes their meanings, his report is senseless, and we know him to be a faker. But I have yet to note the fake geologist imitating plain statements of geologic facts—that kind of masterpiece he doesn't attempt to copy. So I suggest this method of protecting our useful science from successful imitation; the economic geologist should tell his story in plain English, then because of the transparency of this statement his clients or the public can see things as they are and will learn to refuse the highly colored substitute offered by his quack imitators.

There is really somewhat of an obligation upon us, both as scientists and as partners in the world's business, to show the world that geology is not mystery or magic, but only common sense. I have told practical men of business that they should give little credence to the geologist

who cannot tell his story in common language. The world has a right to discount our usefulness and even to distrust our honesty if we persist in concealing our thoughts, or lack of thoughts, behind a mask of professional jargon. The lawyers and the physicians whom I trust most can and do explain their technicalities to me in words that I can understand. Isn't plain geology the safest and most useful kind?