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THE BIRTH OF A SUPERSTITION

By Willy Ley

● There's an item a lot of people "know" that ain't so: the ancient Greeks were not color-blind to blue. But how'd the idea that they were ever get started?

Illustrated by Kramer

It is anything but an exaggeration to state that misconceptions, once formed, display a "survival value" which puts even the proverbial—albeit unscientific—nine-lived cat to shame. There is nothing on Earth that is as persistent and as insidious, as penetrating and as permanent as a nice, juicy and impressive blunder.

Twenty times at least it has been proved that young George Washington did not chop down a cherry tree; thirty times it has been asserted that Beethoven did not say "fate knocks at the door" in reference to the first four notes of his Fifth

Symphony. Yet, when you open your newspaper tomorrow morning or your weekly five-cent magazine, you'll find—not the denials, but a reference to the original story. Cinderella did not wear glass slippers, but ermine slippers—that story resulted from a mix-up of the two French terms *pantoufles de vair* and *pantoufles de verre*—but try and abolish the mistaken translation.

It seems that a misconception, resulting originally from a faulty observation or at least a faulty interpretation of a correct observation, achieves permanency as soon as it finds its way into print.

Once printed it stays printed. Of course, the corrections and denials find their way into print, too, but, somehow, it always happens that the original blunder finds its public, while the denials and corrections fail to do so. Sometime later somebody digs up the original story and, being ignorant of the corrections made in the meantime, re-reveals it as forgotten knowledge. It works somewhat like those alleged medieval curses that lie dormant in forbidden books. As long as the book stays locked up everything is all right, but when it is read the curse takes possession of the reader and he is bound to pass it on to the next victim.

This is especially true of one misconception which is more widely known and more widely believed than many other correct and, incidentally, much more useful bits of information.

I am speaking of the assertion that the ancient Greeks were not able to see the color "blue," as evidenced by the Homeric epics. Why this item of knowledge should find such an extended audience is more than slightly mysterious, but it happens to be the case. You can find it stated in well-meant serious books and it crops up, too, in novels—historic and otherwise—and short stories. Even one of the newspaper correspondents who reported on the war in Greece made passing mention of that "fact" in saying that the modern Greeks did see the blue of the Mediterranean Sea. One could feel him quiver with pride about the extensiveness of his knowledge.

I could simply state that the notion of the blue blindness of the ancient Greeks was disproved many years ago and that, according to modern knowledge, the Greeks of the heroic period could see blue as well as any man of today. But I think it advisable to relate the whole story in some detail, partly to prove the statement itself, partly because the development of that notion is a good example of how a misconception originates, how it takes root and grows into an independent life of its own.

It all began in 1858 when W. E. Gladstone published the third volume of his "Studies on Homer and the Homeric Age." This book contains a chapter on Homer's use of words denoting colors. Gladstone was greatly surprised about "the slight use of color, as compared with other elements of beauty" and he concluded that Iliad and Odyssey both exhibited "a vast predominance of the most crude and elemental forms of color, black and white, over every other, and the decided tendency to treat other colors as simply intermediate modes between these extremes."

In this chapter Gladstone emphasized that blue fares worst of all colors in Homer, that the sky and the sea are never called blue and that a word, "kyanos"—which was customarily translated as

"blue" and which did mean blue in later Greek writing—was often used in places where it could not possibly mean blue. Nineteen years later, in 1877, Gladstone published an article "The Colour Sense" in the magazine *The Nineteenth Century* in which he took an even stronger point of view, holding that Homer and his contemporaries did not see any colors at all, but just shades between white and black, in about the manner of a photographic emulsion.

During the interval between these two works two German scientists had joined hands with Gladstone. One of them, Lazarus Geiger, wrote a book called "The Evolution of Mankind" (1871) wherein he not only supported Gladstone with reference to Homer and to the ancient Greeks in general, but in which he also asserted that the other ancient civilizations had suffered from the same shortcoming. The books of the Vedas, the Avesta, even the Bible do not mention blue. It cannot be found in the Bible, either, although there would be ample opportunity for it, because the Bible mentions the sky—this is Geiger's count—not less than two hundred and fifty times. Even the Koran, which was written much later, does not contain the word "blue."

After this, an expert in another field, Dr. Hugo Magnus, professor of ophthalmology at the University of Breslau, after consulting with his father—who was professor of Oriental languages at the same university—decided to draw some conclusions from these finds. He published a book, "Die Geschichtliche Entwicklung des Farbensinnes" ("The Historic Development of the Color Sense") in which he surveyed the material collected by Gladstone and by Geiger. Based on the evident complete or partial color blindness of the peoples living prior to 1000 B. C., Magnus evolved the theory that the color sense represents a very recent step in the evolutionary process. The acquisition of the color sense could even be dated; among the Greeks it took place during the interval between Homer and Plato, among the Romans slightly later and last among the Semitic tribes, as proved by even the latest books of the Bible and the still later Koran.

Cases of color blindness in our time had, therefore, to be taken as atavisms and Dr. Magnus prophesied that people a thousand years hence would be able to see and to distinguish new colors in the ultraviolet, still invisible in 1900 A. D.

It sounded very convincing. We have to remember that it was the general and accepted belief at that time—which, as we know now, hardly holds true—that aborigines cannot tell good paintings from bad, that their musical taste is worthless and that their evaluation of smells is simply atrocious. Even modern man is not born with an aversion against bad smells, or harsh color combinations or

"hot" music. He has to attain these faculties by developing his sense of discrimination. And we all know that some—including orchestra leaders and painters—never do.

The investigations of the Gladstone-Geiger-Magnus group seemed to offer an explanation for all this, at least as far as the sense of vision was concerned. If the various white nations had acquired their color sense at about the time of Christ and not earlier, it was not at all surprising that the aborigines had not progressed that far even in the Nineteenth Century.

Somebody found out that a very early author, Pliny the Elder, had actually told the story. Somewhere he had said that at first paintings were executed with red pigments only, then with red and yellow, that black and white were added later and finally the full range of the colors of the rainbow. As for the rainbow itself it offered additional proof. Xenophanes had said that it was purple, red and yellowish-green. Aristotle had called it red, green and blue with a narrow yellowish band between red and green. And the Edda had spoken about "three-colored rainbow bridge."

Further proof could be found in the etymology of the word "blue" itself. In Italian it is *biavo*, in French *bleu*, in German *blau*, all these words going back to the Old Norse *blá*, which, however, is also the root of "black." This closed the circle, a Norse term which meant blue as well as black—and all Romanic languages were forced to borrow it because they had none of their own. Evidently the Norse had learned to see blue earlier, naming it with a modification of their word for black when it emerged from the darkness of the invisible.

It all seemed to fit into the evolutionary scheme that Magnus sketched out. The two "warm" colors, red and yellow, he said, were seen first, only much later did the eye learn to discern the shorter wave lengths which originally had failed to register at all on the retina.

And then the three-colored rainbow bridge collapsed and Gladstone and Magnus—Geiger had died in the meantime—found themselves marooned in the lofty tower of an unsupported theory, built on the Homeric isle that "solemnly lieth in the Western gloom, surrounded by waves of purple and darkness."

Two men, curiously enough again an Englishman and a German, brought this about. The name of the Englishman was Grant Allen, that of the German Dr. Ernst Krause. Grant Allen—according to his self-description a "comparative psychologist"—concentrated his whole attack in one book ("The Colour Sense," London, 1879) which had been started before Gladstone and Magnus descended upon civilization with their nonsense. Ernst Krause did not write a book—which he did

frequently and well—but fired a long succession of blasts in magazine articles. They are pretty hard to locate now, sixty-five years later, and some were published under his pen name, Carus Sterne, an anagram of his real name.

Krause-Sterne seems to have recognized the true and not so very surprising cause for the Great Misunderstanding in a flash, because a complete refutation of the theory can be found in a hastily written review of Dr. Magnus' book. Starting with Geiger's statement that the Bible never calls the sky "blue" in spite of two hundred and fifty opportunities for doing it, Krause quietly pointed to *Exodus 24:10*. In the King James version this reads:

And they saw the God of Israel: and there was under his feet as if it were a paved work of a sapphire stone, and as the body of heaven in his clearness.

The Douay version renders the latter part of the sentence as:

—and under his feet as if it were a work of sapphire stone, and as the heaven, when clear.

Krause recognized the real shortcoming in this quote. It sounds very much as if a man tries his best to describe "blue," while lacking the term itself. In fact, the Hebrew language is said to lack a word for blue to this day—at least Geiger said so. The shortcoming was one of language, not of vision.

This simple explanation found substantiation in the fact that the lapis lazuli was highly valued in the ancient world. Krause pointed out that lapis lazuli is an opaque stone, that it does not scintillate, that it is neither very hard nor very heavy, in short that it has no interesting features except its color. And that color is blue—but if the ancients could not see blue, why did they value it? The same goes for the turquoise and I may add that one of the twelve stones in the breastplate of the High Priest was a turquoise. And the tribe represented by this stone—I forgot which one—carried a flag "the color of the turquoise."

Krause also pointed out that the two objects most likely to look blue in Nature are the sky and the sea. But those old poems of Homer that were the starting point of the whole controversy, were written at the shore of the Mediterranean Sea, where a blue sky—and consequently a blue sea—is normal. If the sea looked different to Homer at dusk or flamed red and yellow with sunrise and sunset, he said so explicitly and vividly.

So much for Dr. Krause's answer to Gladstone and Magnus. He forgot to add that Magnus should have incorporated his small book on the development of the color sense in another bigger



work he wrote. The title of that bigger work is "Superstition in Medicine"!

Grant Allen, the "comparative psychologist," had been working on a thesis the gist of which was "color sense comes from fruit eating" when Gladstone and company made their big discovery. It caused him to rewrite a part of his book and to add one or two chapters, but otherwise he saw no reason to doubt his own work.

For years Allen had been corresponding with zoologists about the color sense of animals and had been mailing questionnaires to all parts of the British Empire, inquiring about the color sense of the aborigines. Their taste was often enough "barbaric," but it always implied perfect color vision. "I may as well say at once," he wrote, "that the questionnaires bore out *in every case* (his italics) the supposition that the color sense is, as a whole, absolutely identical throughout all branches of the human race."

But he found several instances of missing color words, bearing out Krause's assertion that the

shortcoming was of purely linguistic nature. He found, for example, that South African tribes lack a native word for violet, but they were able to see that color. A Mozambique used a Dutch word in his native speech, the term "purple," something he knew but could not name except with a borrowed word.

Much nearer home, Allen found another example of linguistic inadequacy. The Highland Scots use the word *gorm* for the color of the sky as well as for that of grass—but to suggest that they are, therefore, color-blind, might be unwise. Furthermore, Allen pointed out, even our own color words are rather clumsy. Lilac, lavender, violet, pink, saffron, cherry, orange and chocolate are color words, but they are also the names of objects, mainly flowers. They are not color words originally and a term like "cherry" can describe the greater part of the visible spectrum when taken too literally. Emulating Gladstone's methods, Allen finally counted the color words in a poem by a man who was certainly not color-blind and

who had the whole vocabulary of recent English at his disposal. The poem was Tennyson's "Princess" and Allen found: red ten times, rosey and similar terms denoting shades of red ten times, golden, gold et cetera twenty-six times, purple eight times, yellow and orange each once, together fifty-six mentions of the red-yellow half of the spectrum. The green-blue half of the spectrum was represented as follows: green five times, azure three times, blue, violet and lilac once each, together eleven. Which proves that Tennyson saw red-yellow five times better than green-blue.

And now I'll go in for a few Gladstonisms myself, looking back at the language of the Twentieth Century from, say, 2500 A. D.

Even after a short and cursory contemplation of the available material, it becomes evident that the people of the Twentieth Century had a very weak color vision, in fact it seems as if the only color they saw well was red. Else it could not be explained that they offered a choice of red or white wine at dinner. Wine that is not red is yellow—but the alternate explanation that the choice was wine or milk might be acceptable. It is known that they drank milk.

Even the ability to see the color "red" must have been recently acquired in the Twentieth Century. An earlier English poet by the name of William Shakespeare wrote in "Macbeth":

"—here lay Duncan
His silver skin laced with his golden blood."

This proves that he could see only a difference in intensity; blood is, after all, red and the skin of the "white" race is pink. Besides they used a term derived from the Latin word *niger* for the colored race, the word Negro. But *niger* means definitely black, while the Negroes were of a blackish brown color.

The Russians of the Twentieth Century must have been able to see red, since one of their daily newspapers was called *Krassnaya Zvezda* or *Red Star*. But they could not see blue, there was no word for blue in their language. Rather, they had two such words, one used in reference to the color of the sky on a clear day, the other for dark-blue. It is evident that those terms also denoted simply a difference in intensity.

The French of the same period called a dark-red variety of wine "blue wine" and referred to the hour of dusk as *l'heure bleue*—"blue" must have meant just darkness to them.

As for the Germans of the Twentieth Century it can be regarded as an established fact that they were completely color-blind. In the first place they had only one word—*Farbe*—for dye, color, pigment and paint. They called rye bread "black bread" and a pine forest Black Forest—it is obvious that any dark shade, whether brown or

green, looked simply black to them. They—and others—referred to nobility as blue-blooded. They named a certain type of beer *Weissbier*—white beer.* They called a coppersmith *Rotschmid*—redsmith as distinct from an iron or blacksmith—although the metal such a man worked with was mostly yellow brass. Finally they called an intoxicated man "blue." This usage clinches the case, because it is known that this idiomatic term was used as a superlative for "drunk." It meant senselessly drunk. Senselessness implies mental darkness, dark is black and black is blue—Twentieth Century English also used the term "blue" in a connotation of mental despair, mental darkness.

You say this is nonsense? But I was only imitating Gladstone's reasoning. Of course he referred to a more noble language, classic Greek, where he found that Homer used *leukos* for white, *melas* for black, *erythros* for red, and *xanthos* probably for yellow. He also found that *chloros*—green—and *ochros*—ochre—were sometimes used interchangeably and he was quite sure that *kyanos* never meant blue but just dark, because it was applied to the eyebrows of Zeus, the hair of Hector and of Hera and the mourning cloak of Thetis. It never occurred to him that Homer did not need to worry about the distinction between blond and brunet since they were all black-haired. But black hair can have a bluish or a reddish sheen, that was the one distinction required. Gladstone, to proceed further, wanted to translate the "blue-prowed ships" as the "bronze-prowed ships"—which would have rendered them green-prowed in a hurry—and he changed the frieze of *kyanos* in King Alkinoos' hall into a frieze of bronze. (The latter is not impossible, since the walls of the hall were covered with sheet copper.) All of this was not taken as a proof for the legend that Homer was blind, but just as a proof that he could not see blue, which in turn was taken as an indication that none of the ancient Greeks could. But those people who saw only the red end of the spectrum lacked a word for orange!

During the decades following the first publications a number of interesting discoveries were made. Actual discoveries, not only the literary variety. The Babylonian Ishtar Gate was excavated, with towering walls built of glazed bricks, bricks of the brightest cornflower blue I have ever seen. Egyptian paintings were discovered; no color is missing in them. These discoveries took care of Lazarus Geiger's assertions or what was left of them. And on Greek soil the ruins of a banquet hall were found, with a frieze of blue *kyanos* just as Homer had described it in his epic.

*The term really means *Weizenbier*—wheat beer.

In addition to that Pliny's story about the development of painting had found a perfectly good explanation—it just meant that the ancient painters had had trouble obtaining a blue dye or pigment. Even much later, blue was very expensive; one of the great masters—I believe Albrecht Dürer—is known to have had trouble with his wife every time he showed too large a blue area on his canvas. His wife appears to have been of the thrifty variety.

In short the color words of any language seem to have followed the accomplishments of the artisans—but they had great trouble in obtaining blue dyes or pigments. But vision had nothing to do with these struggles.

The greater part of all this was known in 1900. But the "ancient curse" was not dead. It was only hidden away in books. In 1904 a German scholar wrote a book dealing with known cases of color-blindness as applied to the Homeric poems. As for Homer he just repeated Gladstone's and Magnus' assertions—not knowing Allen's work at all and only one of Krause's numerous articles—and arrived at the remarkable conclusion that blue blindness must have been a racial characteristic of the ancient Greeks. As "proof" he printed a color reproduction of an ancient painting of Zeus—not a great masterpiece—with a few green dabs on the wooden footstool of the god. A blue-blind man, his argument ran, would have taken that kind of green as a darker shade of wood color. But he

had to admit that many people to whom he showed the color print failed to see the "mistake"—it took me quite some time to find it—or to realize what it indicated. He disclaimed the possibility that the paint may have undergone chemical changes in the meantime, "although no chemical analysis was made." What would he "prove" from a small collection of modern paintings?

Since then the assertion of Greek blue blindness has been resurrected from time to time, usually by amateur scholars. How widespread the misconception still is even now is indicated by an excellent essay, published in December, 1927, in the series "Smith College Classical Studies." The title of the essay is "Color in Homer and in Ancient Art" and its author is Florence Elizabeth Wallace. The author, who arrived at the correct result that the "blue blindness" consists of linguistic peculiarities only, admitted that she "undertook the study of the use of color in Homer with the conviction that its peculiarities were caused by shortcomings in the vision of the Homeric Greeks." In other words she had at first accepted the story which, somehow, had reached her, until "further studies failed to reveal grounds for this idea."

But so far this realization seems to be restricted to circles of Greek scholars—when you read a newspaper report on a battle in which Greek soldiers took place the reporter will not fail to tell you that they "now" see the deep blue color of the Mediterranean.

THE END.