

PHYSIOLOGY-PSYCHOLOGY

Cockeyed Art

More Than Just a Figure of Speech—Bizarre Art May Result From Visual Defects Which Distort Things Seen

By JANE STAFFORD

DID you ever come away from an exhibit of modern paintings with the feeling that the artist must be cockeyed to make such queer-looking pictures?

If you did, you are not far from being right about it. The strange colors, distorted figures and queer impressionistic effects of modern paintings are due in many cases to defects in the eyesight of the artists, in the opinion of a Los Angeles eye physician, Dr. Lloyd A. Mills.

Dr. Mills does not think the artists are cockeyed, but he claims that such visual defects as nearsightedness and astigmatism account for what the average man considers queer in modern art. Dr. Mills gives this explanation of the vagaries of modern art in a report to fellow eye physicians in the *Archives of Ophthalmology*.

Visual defects, he thinks, may also have been responsible for much that is great in modern art and were perhaps a factor in the founding of the modern school of impressionistic art.

Peripheral Vision

Persons with defective vision, Dr. Mills points out, depend much more on side vision than on central vision. As you know, the things you see out of the sides of your eyes are not very distinct. Nearsighted persons who do not wear glasses to correct the defect see very clearly objects within a short distance from their eyes. Beyond that point, which eye physicians call the far point, they cannot see distinctly, and the vision they use is side vision. Peripheral vision is its technical name.

With this type of vision, details are lost, Dr. Mills explains. Essential lines and shapes are relatively more striking but objects generally are blurred. Colors, especially blue, are not seen correctly. A considerable percentage of painters have this type of vision, Dr. Mills states. This is only to be expected, since few persons who use their eyes to such extremes as artists do escape some visual defect.

If you recall some of the modern art you have looked at, you can see how well Dr. Mills' explanation fits the pictures.

Truly great art, according to this Los Angeles eye physician, depends on the proper use of both side and central vision. When you look at a man plowing a field, you see the man and the plow distinctly (with central vision) but the edges of the field, the sky and any surrounding trees (seen with side vision) are not too distinct, though you have an impression of them. Artists a generation or so ago in painting that scene would have put on their canvases every detail not only of the plowman's face and costume but of the entire scene, so that you could see every leaf on the trees at the edge of the field and every stone the plow had turned up.

With Side Vision Only

Modern artists of the impressionist school paint the whole scene as it appears when viewed with side vision only. The first type of painting is known as photographic, and while it has its place, especially in decoration or for historic purposes, it is never, Dr. Mills says, optically correct, even when pleasing. Impressionism, when carried to an extreme, results in pictures that seem queer and all wrong to most of us.

How an artist with a certain rather common type of visual defect cannot help painting these queer-looking pictures becomes clear when you read Dr. Mills' description of how things look to him when he takes off his eyeglasses.

He has himself compound nearsighted astigmatism. If you happen to have this type of visual defect you might try a similar experiment. The far point for Dr. Mills' eyes, beyond which vision ceases to be clear when he leaves off his glasses, is only about six inches. Within this range, he says, he can appreciate detail that is so fine as to be almost microscopic.

"Beyond this, and especially over 20 feet (6 meters), objects become greatly blurred and colors run together with curious blends and unusual, washed-out

values. There is definite oblique distortion at far distances, differing in the two eyes, and often only the essential lines of form and contour provide the clues for identification of the object under examination."

All this, of course, refers to how he sees things without his eyeglasses, as does the following description:

"At the symphony concerts my seat is in about the center of the pit, nearly 70 feet from the stage. Three points of attention fix my interest at once: the tall form of the leader in the center, attenuated like an El Greco drawing, two golden harps on the left flank, and a strong white reflection from the curved, glistening, light-brown barrel of the bass drum, all striving for attention.

"Gourds on the Bias"

"The director holds the center of interest, gyrating in strange contortions like some fearful wizard before a medley of misshapen geometric patterns in blacks, grays, whites, brown and gold; there are no details anywhere, merely blurred outlines of color, form, light and movement. The cellos, on the right, appear like enormous yellow-brown gourds placed on the bias; the hands of the cellists form curious patterns, the bowing hand being a yellowish disk weaving in and out, while the hand which waves over the frets plays up and down at a wholly different angle of inclination.

"The white shirts of the drummer and of the two men on the extreme flank of the bass viols appear as blots of white and other shirts as vertical slits. The faces of the players of the stringed instruments form a veritable flower pattern, like great nodding daisies, in whites and yellow-browns; the bowing hands weave up and down as yellowish disks. The black clothes of the conductor and of the row of men next to the audience, that is, the men farthest from the strong overhead illumination, are jet-black, while the identical apparel of the rest of the musicians, directly under the lights, is gray-black, the contrast being sharp.

"When the harps are seen with one eye and then with the other eye, there is a prompt change in the angle of their inclination from the vertical, which represents the difference in slant given by the different degrees of astigmatism



AS THE MIND SEES

Organic disease of the brain can affect the eyesight in a number of ways as well as unbalancing the mind and it was probably, Dr. Mills says, "a large if not the chief factor in creating the picturized eccentricities of Van Gogh and Gauguin." This painting of the Public Gardens at Arles is by Van Gogh whose life as well as his artistic work was seriously affected by a mental disorder.

in the two eyes. The same change is noted in the size, shape and slant of the cellos and in the hands and faces. The vision of a single eye is much less distinct and brilliant, as is always the case, than the combined vision, and distortion of objects is much more apparent with one eye than with the two eyes.

"If I were a painter," Dr. Mills concludes, "and could depict this orchestra exactly as it is seen with uncorrected vision, my place in the forefront of truly impressionistic art would be unchallenged."

One or two degrees of nearsightedness, however, does not seriously handicap a person, Dr. Mills goes on to say. It may, on the contrary, have the advantage of focusing the eye perfectly at a comfortable range for painting or reading. Probably many artists do not even realize that they are somewhat nearsighted because of the comfort this slight defect gives them at ranges for working. Their nearsightedness can only be told by noting in their paintings their uniform use of side vision with what Dr. Mills calls "its apparitional and rarefied graces."

Dr. Mills' attention was first drawn to the effect of visual defect on the artist's work when he became interested in an artist who had compound nearsighted astigmatism. This man had a sprightly sense of color and shape but

"created curious distortion of details such as too long hands and enlarged knuckles." These points suggested imperfections in his vision, which were proved in examination of his eyes.

When he put on glasses that gave him correct vision, he saw at once the distortions in his paintings. He complained, however, that the unaccustomed clarity with which he saw color and detail made him lose the effects of masses of color and of the essential lines of contour and form which are more marked when vision is blurred. He was never able to paint in his established style, Dr. Mills reports, when wearing his glasses.

The visual defects of many artists are a matter of record. Cezanne, for example, was quite nearsighted and as a result most of his paintings are out of focus, and his interpretation of color, form and mass, Dr. Mills says, is wholly that of distorted side vision, with much of the color defects that results from nearsightedness. Cezanne struggled over his paintings and was never wholly satisfied with them. He abandoned one portrait, after 115 sittings, and complained that "the contour keeps slipping away from me."

Added to this Cezanne suffered from mental and nervous ails which affected the way he worked.

Another great artist who probably

was nearsighted was Renoir. While no direct record of examination of his eyes is known, remarks he made give the clues. He wore no glasses but at the age of 64 spoke of liking to walk close to a picture to study the details. At the age of 64, no person with normal or far sight can appreciate, much less study, details at close distances without glasses, Dr. Mills comments. Only shortsighted eyes can do this without strain. This shortsightedness is probably the reason for the lovely use of color and sunlight for which Renoir's paintings are noted.

Degas, famous for paintings and drawings of ballet girls, was extremely nearsighted and wore heavy glasses throughout his adult life. This nearsightedness probably is responsible for the famous pictures of dancing girls, for Dr. Mills points out that it was through the use of side vision—result of the nearsightedness—that Degas was able to depict the grace and movement of the dance in his unsurpassed fashion.

The modern impressionistic style of painting stage settings is, in Dr. Mills' opinion, owing to the fact that Gordon Craig, who started it all, was extremely nearsighted. Isadora Duncan writes that he could not distinguish her in detail across their breakfast table. This man's visual defect has given the world Reinhardt, Jacques, Copeau and Stanisvasky and taken stage settings out of the period of "the old realistic scenery, every leaf shimmering on every tree and all the houses with all their doors and windows opening and shutting."

Sargent's Red Line

Another modern artist whose paintings may seem queer to you is Pissarro. He suffered from repeated ulcers on the cornea of his eyes. These ulcers and their scars were a constant source of worry and eyestrain.

If you are familiar with the work of John Singer Sargent you will remember that he often painted a red or green line around white objects. Because he

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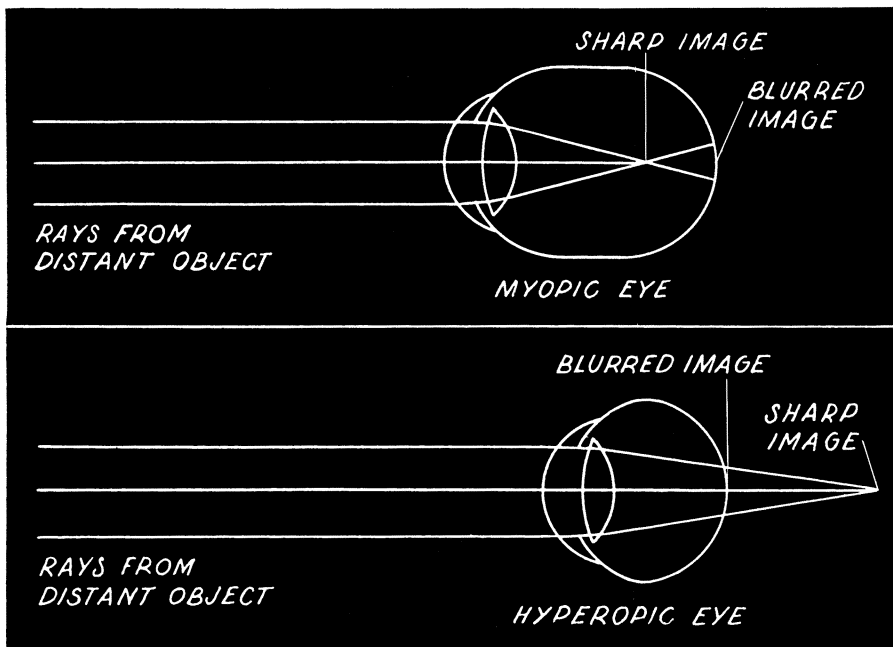
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HOW IT WORKS

In the nearsighted or myopic eye, the eyeball is elongated and light rays from an object brought to a focus in front of the retina, instead of exactly on the retina as in normal eyes. The rays then diverge to form a blurred image on the retina as shown in the top diagram. For distinct vision, objects must be brought nearer to the eye. The hyperopic or farsighted eye is smaller than normal and the parallel light rays from a distant object come to a focus beyond the retina, again blurring the image. Farsighted persons cannot see distant objects any more clearly than those with normal eyes. The term comes from the fact that the nearest point of clear vision must be farther from the eye than normal.

had astigmatism, he actually saw such lines which at times he put into his paintings.

While many artists painted what is seen with side or peripheral vision because that is the only kind of vision they had, others used this method deliberately. Sometimes this was used to achieve greater beauty or artistic value. This may have been true of the great French artist, Monet, who was the first impressionist. Dr. Mills regrets that there is no record of the exact condition of Monet's eyes. Whether or not he knew the optical laws of the relation of central and side vision, Monet used side vision accurately to depict "the expression of light, of air, of movement and of the unceasing changes" which are continually taking place in what Dr. Mills calls the realm of side vision. You can recognize this at once if you are familiar with Monet's paintings, particularly his "Impression. Soleil levant" which gave the name impressionism to this style of painting.

Monet was the first French artist who deliberately painted light and who understood that shadows are not just black or brown or blue, but actually combinations of colors in which any

tone may predominate under given conditions. In his interpretation of light, he drew inspiration from the English landscape painter, Turner.

Monet rarely used the normal central area of greatest visual clarity. His visual observations are otherwise so true that Dr. Mills thinks he probably was somewhat nearsighted, enough so to make easy the recognition of the values lying in side vision and "to give his landscapes the characteristic concubinage of blur, modification of color and persistence of essential lines and contours which are the essence alike of normal side vision and moderate myopia."

Turner's painting, "Rain, Steam and Speed," together with Rembrandt's "Landscape," Homer's "Canon Rock," and Israel's "The Day before Parting," are "nearly mathematically exact instances of correct visual areas, with equally correct subordination of the peripheral field," Dr. Mills states.

Great painters of the past have at times shown in their works that they appreciated the visual truths of central and side vision but only in certain works of Rembrandt, Renoir and Monet has Dr. Mills found artists consistently using central and side vision in the way that

the physician knows to be optically correct.

Some artists, it appears from Dr. Mills' discussion, have used side vision deliberately and with good effect because they appreciated its value and others have used it because it was the only kind of vision they had. Still others, however, have apparently used it merely because it was an easy way to create an effect that had become popular. Monet knew how to use it to good advantage. His deliberate change from the classic style of painting was a reflection of the revolution in many fields that followed the War of 1870.

But Monet set a style that was easy to follow and Dr. Mills accuses some of his less worthy followers of being racketeers.

"The ignorant and the unobserving, the immature and the lazy, the insane and the sensational, the primitivist and the idealist all use the qualities inherent in side vision for the expression of their essential emotions," Dr. Mills explains.

"The correct use of central and side vision, however, requires concentration, intelligent observation, technical mastery and emotional control, and that this combination of abilities is rare is one of the reasons that its perfect flowering has appeared spontaneously so seldom in the whole realm of art."

Side vision, unfortunately, is often used by artists "who aim merely for effects of mass, line, color or symbolism and particularly by those who are too lazy or ignorant to draw well," Dr. Mills charges.

"Such vision, in a literal sense, is the vision of objects badly seen, badly remembered, and often badly drawn, especially if there is an accompanying visual defect of severity, when color values also become modified.

Artistic Racketeering

"The picturization of objects seen with peripheral vision is a matter largely of mental interpretation, and this is the doorway through which all sorts of artistic excesses, perversions and daubery have been permitted to enter and to gain recognition as true forms of art.

"An informed public opinion should have recognized this debauchery as evidence of ocular or mental pathologic (diseased) state or, as much of it is, deliberate racketeering in art. . . . A careful analysis of recent baroque art should identify without much difficulty the artists who sincerely painted objects as they saw and idealized them with defective eyes and those who had other sources of motivation."

Dr. Mills recognizes that strict adherence to optical laws may not always be desirable in painting. However, he points out that, except for the great examples of historical and photographic likenesses in painting, the few paintings which are acclaimed by artists and laymen alike as outstanding and truly great works of art almost without exception show the normal relations of central and side vision.

A brighter future in art, freer from both the mischievous and the unavoidable use of side vision, is suggested by

another of Dr. Mills' comments. In the past eye defects were not so frequently recognized in either artists or laymen. On the continent, however, when impressionistic art was getting its start, no one wore eyeglasses unless forced to because of extreme visual defect. The present gradual spread of better visual hygiene will make the eye defects of the artist much less of a factor in his painting.

It may be that the age of cockeyed art is even now passing.

Science News Letter, February 6, 1937

Science— Be Expert in One, Be Informed on All

ENGINEERING

Air Conditioners Challenged To Remove Bacteria from Air

NEW medical aids by air conditioning in the treatment of disease, houses insulated in winter by the use of ice roofs, scientific studies that seek the answer to the perplexing question, "What is a draft?", and research to improve the "liveliness" of air, were the high point topics coming up for discussion at the meeting of the American Society of Heating and Ventilating Engineers at St. Louis.

More and more the science of medicine and the profession of engineering are joining forces to combat one major avenue by which disease still spreads. Studies have revealed that hay fever and its kindred ailments yield to treatment in controlled air-conditioned rooms.

Now a new committee of the Society has been organized to investigate the purification of air in hospitals to prevent infection. A hospital, it is pointed out, goes to great lengths to sterilize its oper-

ating rooms, wards, instruments and the wearing apparel of the staff. Air conditioning for increased comfort to the patients and staff is now used in many places. But very few hospitals attempt to kill organisms in the air of the operating rooms or infectious wards for respiratory diseases. Yet science knows that radiation of specific wavelengths can kill bacteria floating about in air.

But the matter of turning this academic knowledge into engineering practice on an economical basis is a real and serious problem. While the heating and ventilating engineers make no claim to medical knowledge they do feel that their engineering experience will bring a more speedy solution to the problem.

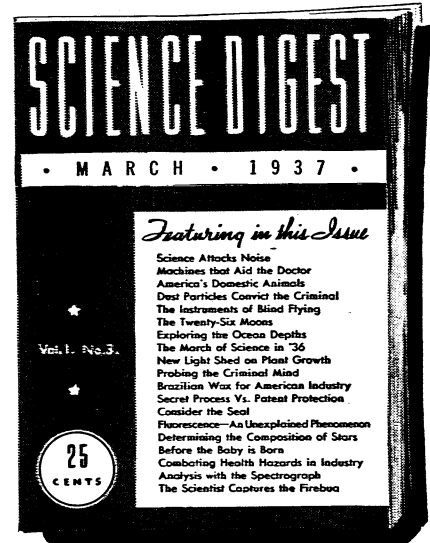
Tied in with medicine also, in the field of physiology, is the major research problem of answering the simple question, "What is a draft?" or said another way, "When is a draft not a draft?"

Already it has been found that one person's pleasing breeze is another person's discomforting draft. There is a sizable touch of physiological reaction tied up with the question of drafts. And it is a problem which air conditioned theaters, as only one example, have to worry about.

Few people, to illustrate, regard a mild flow of air on the face as a draft. Yet the same air flow on the back of the neck will bring wails of discomfort. Other people may have the same dislike for an air flow around their feet or legs.

On the answer to this question rests, in many ways, the future usefulness of forced ventilation—with either heating or cooling—which is the growing trend in making enclosed places more livable.

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