

REPORTED
IN THE COURT OF SPECIAL APPEALS
OF MARYLAND

No. 1399

SEPTEMBER TERM, 1994

WILLIAM LEROY SCHULTZ, SR.

v.

STATE OF MARYLAND

Wilner, C.J.,
Cathell,
Salmon,

JJ.

Opinion by Cathell, J.

Appellant, William Leroy Schultz Sr., was convicted by a jury in the Circuit Court for Washington County of driving under the influence, speeding, and driving with alcohol in his blood in violation of a court-ordered alcohol restriction on his driver's license. He was sentenced to nine months detention on the driving under the influence conviction and was fined for the other convictions. Appellant raises the following questions on appeal:

I. Did the court err in admitting the officer's testimony about appellant's performance of the horizontal gaze nystagmus test?

II. Did the court improperly influence the jury with its remarks and questions of the officer?

FACTS

Officer Timothy Rossiter stopped appellant on March 1, 1994, about 11:30 p.m. Upon approaching appellant's vehicle and speaking with appellant, Officer Rossiter detected, among other things, the smell of alcohol and proceeded to administer several field sobriety tests: when asked to recite the alphabet, appellant jumbled several letters after Q; when asked to stand on one foot for thirty seconds, he had to use his other foot to maintain his balance within fifteen seconds; and, when asked to walk in a straight line

heel to toe, he experienced some difficulty doing so. The officer also performed the horizontal gaze nystagmus (HGN) test.¹ As the officer explained at trial:

You measure each eye separately and one point is assessed as the object is passed in front of the eye, if it doesn't move smoothly, that's a point. Once you get to the 45 degree angle, if there's a quiver in the eye, that's a point; if there's not, then there's no point, and when you get to the furthest point, again, if there's a moving or a jumping of the eyeball, that's a point. If there's no movement, then there isn't.

According to the officer, a person can receive a score as high as six on the test, and the higher the score, the more likely it is that the individual is intoxicated. The officer stated that a score of more than four indicates that an individual is intoxicated; a score of four indicates a borderline case. The officer then stated that appellant received a score of five or six on the test. No chemical tests were performed.

Officer Rossiter was the only witness that testified for the State. Appellant testified that he had had nothing to drink that day. On that day, he had flown home from Florida. He testified that he had stopped off at a tavern he owns and operates on his way home for about one-half hour, but had nothing to drink. He indicated that his truck might have exhibited the smell of alcohol because he sometimes uses it to haul empty alcoholic beverage

¹ Nystagmus is defined as "a rapid involuntary oscillation of the eyeballs." *Webster's Ninth New Collegiate Dictionary* 813 (1989).

containers. He also indicated that his difficulty in some of the sobriety tests might have been attributable to an injury that he suffered to his knees several years earlier. The injury causes stiffness when sitting for extended periods of time, as was the case on the day in question.

Appellant's nephew and a friend of his also testified on behalf of appellant. They both stated that they had been with him since about 3:00 p.m. that day, as they were flying back from Florida together. They stated that they did not observe appellant drink any alcohol. They drove with him from Baltimore-Washington International Airport and accompanied him into the tavern that he owns. They admitted that, once they went into the tavern, they socialized with other patrons and could not be sure that he did not have anything alcoholic to drink at the tavern, but they did not observe him doing so. The waitress who was working at the tavern that night stated that appellant only had a ginger ale to drink while he was there. Appellant's son picked him up at the police station and stated that he could not detect any alcohol on appellant's breath or any other signs of drinking. Appellant's wife was waiting for him when he returned home and she, too, testified that she was unable to detect any alcohol on his breath or any other signs that he had been drinking.

Horizontal Gaze Nystagmus

We first acknowledge that the HGN test, when used to detect the presence of alcohol in a person's system, has been the subject of attack, usually with respect to the qualifications of officers who administer the test. It has been noted that:

One of the test's shortcomings is that the officer administering the test may not be properly trained to understand all aspects of the test and to produce results as accurately as the NHTSA manual suggests. . . .

. . . .

. . . To demonstrate a proper foundation, an officer must show that he is trained in the particular procedure, that he is certified in the administration of the procedure, and that the procedure was properly administered. [Footnotes omitted.]

Stephanie E. Busloff, Note *Can Your Eyes Be Used Against You? The Use of the Horizontal Gaze Nystagmus Test in the Courtroom*, 84 J. Crim. L. & Criminology 216-33 (1993). See also Jonathan D. Cowan & Susannah G. Jaffee, *Proof and Disproof of Alcohol-Induced Driving Impairment Through Evidence of Observable Intoxication*, 9 Am. Jur. *Proof of Facts* 3d 459 (1990); Lawrence Taylor, *Drunk Driving Defense*, § 4.4.5 (3d ed. Supp. 1994); Mark A. Rouleau, *Unreliability of the Horizontal Gaze Nystagmus Test*, 4 Am. Jur. *Proof of Facts* 3d 439 (1989); F.R. Irwin, *Defense of Drunk Driving Cases* (3d ed. 1985). See also *State v. Superior Court*, 718 P.2d 17 (1986) (appendices A and B); 2 Donald H. Nichols, *Drinking/Driving Lit.*, § 24.09 (1995).

These requirements are faulty in one respect: the level of competency among the officers who administer the test is wide-

ranging. The NHTSA manual defines the "well-trained technician" as an individual who studies and properly adheres to the NHTSA manuals. In all probability, not every officer would meet this standard. Therefore, this comment suggests that certification for administering the HGN test should not only guarantee that the officer will know how to administer the test and know what to look for, but that the officer will know that there are many other causes of HGN other than alcohol. The officer then could at least make a simple connection between alcohol and the effects on eye movement. With such knowledge, the officer could be required to question a suspect about his or her medical condition before administering the HGN test. The officer could carry a check-off card with relevant information to remember the requisite steps. Such an approach would be inexpensive and easy to implement.

Id. at 234 (footnotes omitted).

Appellant alleges in his brief, first, that HGN testing is scientific in nature and, thus, the trial court erred in concluding that it was not and admitting it without a proper foundation having been laid under the *Frye/Reed* (*Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923), and *Reed v. State*, 283 Md. 374 (1978)) standard. Appellant also alleges that, in any event, a proper foundation as to the qualifications of the officer was not laid below and, thus, his testimony as to the HGN test should not have been permitted over appellant's objection.

We agree that the Horizontal Gaze Nystagmus test is scientific in nature and depends, for its admissibility, upon satisfactory proof of its reliability and its acceptance in the relevant

scientific and medical communities. Because we shall, however, take judicial notice of its reliability and its acceptance in those communities, we shall not reverse the trial court on the grounds that a foundation for the admissibility of the test itself was not laid. We shall hereafter hold that the results of HGN testing are admissible in evidence in the courts of this State, provided the administrator of the test is duly qualified and the testing procedure is conducted properly. But, we shall reverse appellant's convictions on the alcohol-related offenses because, under the circumstances of this case, the *record does not reflect* that the officer was in fact properly trained or certified to administer the test. We explain.

The majority of foreign jurisdictions that have addressed the issue have held that the test for HGN is a scientific test. Most of those few states that have held that it is not a scientific test opine that its admissibility depends upon a lesser standard because it is a mere field test and, thus, is admissible without a scientific foundation.² Thus, in both the states holding that the HGN test is a scientific test (the majority) and those states

² There is some confusion in the cases in describing the use of the terms "scientific test" and "field test" as if the two concepts were mutually exclusive. We point out that a "field test" is a test conducted in the field, *i.e.*, along the side of the road. When HGN testing is done, as it usually is, along the road during a traffic stop, it is a field test. It nevertheless retains its scientific character.

holding that it is only a *field test*, it is, nevertheless, admissible so long as certain predicates are satisfied.

One such case, which held that the HGN test is not a scientific test and is admissible based upon a lower standard, is *State v. Sullivan*, 426 S.E.2d 766 (S.C. 1993). There, the trial court, according to the Supreme Court of South Carolina, had ruled HGN testing inadmissible, expressing

skepticism regarding HGN tests and not[ing] that nystagmus may be caused by physiological forces other than alcohol consumption. Additionally, the circuit court related reservations about police officers conducting and interpreting a medical/scientific test.

Id. at 769 (footnote omitted). In reversing the trial court, the *Sullivan* court equated HGN tests with field tests and held that such results were "admissible when the HGN test . . . [is] used to elicit objective manifestations of soberness or insobriety. . . . HGN tests shall not constitute evidence to establish a specific degree of blood alcohol content." *Id.* (citation omitted).

HGN as Scientific Evidence

Appellant contends that the trial court erred in admitting into evidence the results of the HGN test because the State failed to lay a foundation pursuant to *Reed v. State, supra*, 283 Md. 374, that this test was based on well-recognized scientific principles so as

to have gained general acceptance in the particular field to which it belongs.

In *Reed*, the Court of Appeals stated:

[W]ith particular regard to expert testimony based on the application of new scientific techniques, it is recognized that prior to the admission of such testimony, it must be established that the particular scientific method is itself reliable. *People v. Kelly*, 17 Cal. 3d 24, 130 Cal. Rptr. 144, 549 P. 2d 1240 (1976); Jones, *Danger — Voiceprints Ahead*, 11 Am. Crim. L. Rev. 549, 554 (1973). See also *Shanks v. State*, 185 Md. 437, 440, 45 A.2d 85 (1945); 3 Wigmore, *Evidence* § 795 (Chadbourn rev. 1970).

On occasion, the validity and reliability of a scientific technique may be so broadly and generally accepted in the scientific community that a trial court may take judicial notice of its reliability. Such is commonly the case today with regard to ballistics tests, fingerprint identification, blood tests, and the like. See *Shanks v. State, supra*, 185 Md. at 440. Similarly, a trial court might take judicial notice of the invalidity or unreliability of procedures widely recognized in the scientific community as bogus or experimental. However, if the reliability of a particular technique cannot be judicially noticed, it is necessary that the reliability be demonstrated before testimony based on the technique can be introduced into evidence. Although this demonstration will normally include testimony by witnesses, a court can and should also take notice of law journal articles, articles from reliable sources that appear in scientific journals, and other publications which bear on the degree of acceptance by recognized experts that a particular process has achieved. *People v. Law*, 40 Cal.App.3d 69, 75, 114 Cal. Rptr. 708, 711 (1974).

The question of the reliability of a scientific technique or process is unlike the question, for example, of the helpfulness of particular expert testimony to the trier of facts in a specific case. The answer to the question about the reliability of a scientific technique or process does not vary according to the circumstances of each case. It is therefore inappropriate to view this threshold question of reliability as a matter within each trial judge's individual discretion. Instead, considerations of uniformity and consistency of decision-making require that a legal standard or test be articulated by which the reliability of a process may be established.

The test which has gained general acceptance throughout the United States for establishing the reliability of such scientific methods was first articulated in the leading case of *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923)^[3]:

³ The Supreme Court in *Daubert v. Merrell Dow Pharmaceutical, Inc.*, ___ U.S. ___, ___, 113 S.Ct. 2786, 2793 (1993) held that the *Frye* standard had been superseded by the Federal Rules of Evidence, and, specifically, Fed. R. Evid. 702. The Committee note to Maryland Rule 5-702, however, specifically states:

This Rule is not intended to overrule *Reed v. State*, 283 Md. 374 (1978) and other cases adopting the principles enunciated in *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). The required scientific foundation for the admission of novel scientific techniques or principles is left to development through case law. Compare *Daubert v. Merrell Dow Pharmaceutical, Inc.*, ___ U.S. ___, 113 S. Ct. 2786 (1993).

Thus, the *Frye/Reed* standard is still the standard utilized in Maryland to determine the admissibility of scientific evidence. *People v. Leahy*, 882 P.2d 321 (Cal. 1994), also involved the admissibility of HGN testing and the continuing validity in California
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"Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a *well-recognized* scientific principle or discovery, the thing from which the deduction is made must be *sufficiently established to have gained general acceptance in the particular field in which it belongs.*" (Emphasis supplied.)

That is to say, before a scientific opinion will be received as evidence at trial, the basis of that opinion must be shown to be generally accepted as reliable within the expert's particular scientific field. Thus, according to the *Frye* standard, if a new scientific technique's validity is in controversy in the relevant scientific community, or if it is generally regarded as an experimental technique, then expert testimony based upon its validity cannot be admitted into evidence.

Id. at 380-81.

In a jurisdiction in which it was held that the HGN test was subject to the *Frye* standard of admissibility, it was noted that *Frye* required the State to satisfy a three-prong test prior to the admission of HGN evidence: 1) that the underlying scientific theory is reliable, *i.e.*, that nystagmus is an indicator of alcohol consumption; 2) that the method used to test for HGN is accepted by

³(...continued)
of the *Frye* standard after *Daubert v. Merrell Dow Pharmaceutical, Inc.* That Court, like Maryland's Court of Appeals in *Reed*, retained the *Frye* standard.

scientists familiar with the phenomenon and test; and 3) that the particular officer involved has been trained to follow, and did follow, the procedures established by the scientists. *State v. Witte*, 836 P.2d 1110, 1117 (Kan. 1992). At trial, in the case *sub judice*, the State did not lay any foundation as to the first two prongs of the test prior to Officer Rossiter's testimony. The State, however, contends that the HGN test is not scientific evidence at all, citing *Crampton v. State*, 71 Md. App. 375 (1987), *aff'd*, 314 Md. 265 (1988). In *Crampton*, this Court addressed whether the *Frye/Reed* standard applied to some of the same sobriety tests to which appellant was subjected in this case (excluding the HGN test). The field tests performed in *Crampton* are known commonly as reciting the alphabet, standing on one leg, heel to toe walking, and the finger to nose test. We stated there:

The *Frye-Reed* test is not, however, applicable to the case *sub judice*. Unlike the techniques employed in the above-cited cases, field sobriety tests are essentially personal observations of a police officer which determine a suspect's balance and ability to speak with recollection.

There is nothing "new" or perhaps even "scientific" about the exercises that an officer requests a suspect to perform. Those sobriety tests have been approved by the National Highway Traffic Safety Administration and are simply guidelines for police officers to utilize in order to observe more precisely a suspect's coordination.

It requires no particular scientific skill or training for a police officer, or any

other competent person, to ascertain whether someone performing simple tasks is to a degree affected by alcohol. The field sobriety tests are designed to reveal objective information about a driver's coordination. See *People v. Ramirez*, 199 Colo. 367, 609 P.2d 616, 620 (1980). The *Frye-Reed* test does not apply to those field sobriety tests because the latter are essentially empirical observations, involving no controversial, new, or "scientific" technique. Their use is guided by practical experience, not theory.

Id. at 388.

We have noted that the HGN test is also a field sobriety test. Field sobriety tests are tests of sobriety conducted in the field. HGN certainly meets that definition. We acknowledge that the NHTSA has described the HGN test as "the first and most valid test in the standardized field sobriety testing battery," and that the United States Supreme Court referred to this test as a "standard field sobriety test[]" in *Pennsylvania v. Muniz*, 496 U.S. 582, 585 (1990). The HGN test is, nonetheless, a scientific test, in that the fact that one's eye may jerk or quiver more when one is intoxicated is not universally known.

Alcohol has been known to mankind since the dawn of civilization. It was probably not long after that it was recognized that alcohol affects one's balance, coordination, and ability to recollect.⁴ The HGN test, however, does not test a suspect's

⁴ The HGN test has been used by law enforcement officials for several decades. Appellate courts in this country began determining its admissibility as early as 1985. It was noted as
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coordination or ability to recollect. It is based upon a scientific principle that the extent and manner in which one's eye quivers can be a reliable measure of the amount of alcohol one has consumed.

Nor does the mere fact that an officer may physically observe the jerking of a suspect's eyeballs without the aid of a machine make this test any less scientific. 1 *McCormick on Evidence* (John W. Strong et. al 4th ed. 1992) § 206B states:

It is said that more than 4,000 years ago the Chinese would try the accused in the presence of a physician who, listening or feeling for a change in the heartbeat, would announce whether the accused was testifying truthfully. The modern "lie detectors" operate on the same general principle. [Footnotes omitted.]

It is the premise underlying lie detectors, *i.e.*, that a physiological change is an accurate indication that a suspect is lying, that has failed to gain general acceptance in the scientific community, not the ability to measure the physiological change.⁵ The princi

⁴(...continued)

long ago as 1826 that, in animals, nystagmus was a possible symptom of alcohol intoxication. Studies first conducted in 1897 indicated nystagmus in humans affected by alcohol. Gunnar Aschan *et al.*, *Positional Nystagmus in Man During and After Alcohol Intoxication*, 17 Q.J. of Studies on Alcohol 381 (1956). *See also* Aschan & Bergstelt, *Positional Alcoholic Nystagmus (PAN) in Man Following Repeated Alcohol Doses*, Acta Otolaryngol Supp. 330: 15-29, 1975 (identifies studies by Bárány (1911), Bárány & Rothfeld (1913), Frenzel (1939), Plenkers (1943) and Walter (1954)) and notes that nystagmus effects of different types can increase for up to four hours after intake and still be present for up to several additional hours.

⁵ Another belief as to truth-telling was that one's mouth
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ple underlying the HGN test, *i.e.*, that it is an accurate measure of the intoxication of a suspect, is a scientific principle.

The admissibility of the results of HGN testing has been challenged in some foreign jurisdictions for failing to satisfy the *Frye* standard (or the standard adopted by that jurisdiction for determining the admissibility of scientific evidence). A relatively important early case in which the test was challenged and the results were ruled admissible as evidence of the presence of alcohol was *State v. Superior Court*, 718 P.2d 171 (Ariz. 1986). (Dennis L. Lusk, *Horizontal Gaze Nystagmus*, 23 Arizona Bar Journal (December/January 1988)), states that Arizona was the "first state to . . . approve . . . `HGN'" (Citing *Superior Court*) See also the American Bar Association's Standardized Field Sobriety Testing Video Tape prepared for the American Bar Association by the Northwestern University Traffic Institute). The Arizona Supreme Court stated in *Superior Court*:

The HGN test is a different type of test from balancing on one leg or walking a straight line because it rests almost entirely

⁵(...continued)

becomes dry when lying. The English would test this by having a suspect swallow dry bread and cheese, and the Chinese, by having a suspect chew rice flour. 1 *McCormick on Evidence* (John W. Strong et al. 4th ed. 1992) § 206 n.23. The ability or inability to swallow or lack of moisture in the flour could be objectively observed without the aid of a machine. This, however, does not mean that the tests did not rely on an underlying scientific premise that, under *Frye/Reed*, would have to be proven reliable in order to be admissible.

upon an assertion of scientific legitimacy rather than a basis of common knowledge. Different rules therefore apply to determine its admissibility.^[6]

Id. at 178. In *Superior Court*, a scientific foundation, which satisfied the *Frye* standard, was presented at trial. Thus, the court there was able to determine that the test conducted did satisfy *Frye* principles.⁷ Nevertheless, it held that the test could only be used for the limited purpose of challenging or supporting a chemical test. It was not then considered by the Arizona court sufficient, by itself, to be a basis for a conviction under a statutory provision requiring a chemical test for a conviction. The court noted several "due process" concerns with the test, if it were to be used by itself to sustain a conviction:

The . . . "reading" of the HGN test cannot be verified or duplicated by an independent party. The test's recognized margin of error provides problems as to criminal convictions which require proof of guilt beyond a reasonable doubt. The circumstances under which the test is administered at roadside may affect the reliability of the test results. Nystagmus may be caused by conditions other than alcohol intoxication. And finally, the far

⁶ The court held that the *Frye* standard had to be satisfied in order for the HGN test to be admitted into evidence at a trial, but did not have to be satisfied in order to establish probable cause to request that an individual submit to a chemical test.

⁷ The appendices to the Arizona opinion list and very briefly summarize numerous articles with respect to the reliability of the HGN test. We have reviewed many of those articles in our resolution of this case.

more accurate chemical testing devices are readily available.

Id. at 181 (citation omitted).⁸

That early conclusion in *Superior Court, i.e.*, that the HGN test is scientific evidence, represents what we perceive to be the majority position of foreign jurisdictions on that subject. Other opinions concluding that the HGN test is scientific in nature include: *Malone v. City of Siverhill*, 575 So.2d 101 (Ala. Crim. App. 1989) (Alabama's intermediate appellate court found that the test was scientific and then, adopting the finding of *Superior Court, supra*, that the test satisfied *Frye* and that the error in admitting the HGN test into evidence, without a foundation being laid, was harmless.), *rev'd in part sub nom. Ex Parte Malone*, 575 So.2d 106 (Ala. 1990) (Alabama's Supreme Court reversed, holding that, because it was scientific in nature, the admission of the HGN test without a foundation was not harmless); *People v. Leahy*, 882 P.2d 321 (Cal. 1994); *Foster v. State*, 420 S.E.2d 78 (Ga. App. 1992) (HGN test required a foundation but the error in failing to lay the foundation was harmless in light of other evidence.); *People v. Vega*, 496 N.E.2d 501 (Ill. App. 4 Dist.

⁸ In *State v. City Court*, 799 P.2d 855, 860 (Ariz. 1990), the Arizona Supreme Court held that the HGN test was admissible to prove driving under the influence under a different section that did not require chemical testing, but "only for the purpose of permitting the officer to testify that . . . the results indicated possible neurological dysfunction, one cause of which could be alcohol ingestion."

1986) (HGN test required a *Frye* foundation to be laid; later cases determined that the test satisfied *Frye* and the only foundation that was required was that the officer was trained to administer the test and did so properly, *see People v. Buening*, 592 N.E.2d 1222 (Ill. App. 5 Dist.), *cert. denied*, 602 N.E.2d 460 (Ill. 1992).); *State v. Witte*, *supra*; *State v. Armstrong*, 561 So.2d 883, 887 (La. App. 2 Cir.), *writ denied*, 568 So.2d 1077 (La. 1990) (*Frye* standard was satisfied, taking the approach that Illinois courts later adopted.); *State v. Klawitter*, 518 N.W.2d 577, 584 (Minn. 1994) (The court held that HGN test was not an "emerging scientific technique[]," but is "`scientific' in the sense we use the term," and then found that the test satisfied *Frye*.); *State v. Wheeler*, 764 S.W.2d 523 (Mo. App. 1989); *State v. Clark*, 762 P.2d 853 (Mont. 1988) (*Frye* standard was not used and HGN test was determined to be admissible, but the court indicated that scientific and expert testimony was needed to lay a proper foundation.); *State v. Borchardt*, 395 N.W. 2d 551 (Neb. 1986); *State v. Reed*, 732 P.2d 66, 68 (Or. App. 1987) ("[T]he HGN test draws its convincing force from a scientific principle that consumption of alcohol causes nystagmus. The difference between the HGN test and other, more common, field sobriety tests is that certain reactions to alcohol are so common that we take judicial notice of them." (footnote omitted)); *Commonwealth v. Miller*, 532 A.2d 1186, 1189 (Pa. Super. 1987) ("Results of the HGN test are . . . scientific evidence based on the

scientific principle that consumption of alcohol causes the type of nystagmus measured by the HGN test."); *Emerson v. State*, 880 S.W.2d 759 (Tex. Cr. App. *en banc*), *cert. denied*, ___ U.S. ___, 115 S.Ct. 323 (1994) (The court held that the HGN test was novel scientific evidence and then took judicial notice of the test's reliability. Previous Texas opinions had indicated that the test was not scientific. *See Lancaster v. State*, 772 S.W. 2d 137 (Tex. App. - Tyler 1988).); *State v. Cissne*, 865 P.2d 564, 568 (Wash. App. Div. 3), *petition for review denied*, 877 P.2d 1288 (Wash. 1994) ("Many jurisdictions, perhaps a majority, have concluded that HGN testing is based on scientific principles We join these jurisdictions that recognize that HGN testing rests on an assertion of scientific legitimacy."); and *State v. Barker*, 366 S.E.2d 642 (W.Va. 1988). We shall further discuss many of these cases, *infra*, in our discussion of judicial notice.

Some jurisdictions, however, including Ohio, have held that the HGN test is not scientific evidence. In *State v. Nagel*, 506 N.E.2d 285, 286 (Oh. App. 1986), the court stated:

It is not comparable . . . to a polygraph test which requires the use of a machine, the scientific reliability of which may be questioned. The . . . test, as do the other commonly used field sobriety tests, requires only the personal observation of the officer administering it. It is objective in nature and does not require expert interpretation.

See also *State v. Bresson*, 554 N.E. 2d 1330, 1334-36 (Oh. 1990) (The *Frye* test was not used. "We find that the HGN test has been shown to be a reliable indicator of BAC levels. . . . The admission of the results of the HGN test is no different from any other field sobriety test"). *Bresson* and *Nagel*, like most of the other cases that maintain that HGN tests are not scientific tests, accepted a lesser standard for admissibility than the *Frye* standard. We shall discuss *Bresson* and other cases at more length, *infra*.⁹

We do not find those cases that have held that the HGN test is not scientific to be persuasive. We note that the *Frye* standard was not in use in some of those jurisdictions. In addition, as previously indicated, unlike the Ohio court in *Nagel*, we do not find that the use of a machine, or lack thereof, is a useful indicator of whether evidence is scientific in nature. The Supreme Court of

⁹ See also *Whitson v. State*, 863 S.W. 2d 794 (Ark. 1993) (*Frye* standard not used, holding that HGN test was not novel because of its use by law enforcement officials for over thirty-five years). *Whitson*, however, should be compared to *People v. Leahy*, 882 P.2d 321 (Cal. 1994), and the Court of Appeals's *Reed* opinion, which does not list the length of time a test is used by law enforcement authorities as a factor to be considered in determining a test's *scientific* reliability and acceptance. *State v. Murphy*, 451 N.W. 2d 154, 157 (Iowa 1990) ("we think the result reached in *State v. Nagel* most closely mirrors our own *liberal approach* to the admissibility of technical information" (emphasis added)); *State v. Sullivan*, 426 S.E. 2d 766, 769 (S.C. 1993) (indicating HGN test is no different than other field sobriety tests, citing *State v. Nagel*).

Kansas in *Witte*, 836 P.2d at 1116, noted that the *Nagel* decision had been subject to criticism:

"The Ohio appellate court has apparently ignored the rule that the arresting officer's 'personal observations,' in this instance, constitute opinion testimony. That is, the officer's opinion (that the jerking and twitching of the suspect's eyes during the gaze nystagmus test indicated that the suspect had consumed alcohol) is an opinion which is based upon a so-called 'scientific' interpretation of observed facts which exist outside the common knowledge of the average lay person and therefore would require the testimony of an expert. The court also ignored the significance of the fact that the horizontal gaze nystagmus test draws its convincing force from the supposed scientific principle that alcohol affects the smooth pursuit mechanism of the human eye. It is clear that the horizontal gaze nystagmus test is scientific in nature, as are other numerous reflex response tests (such as Babinski's reflex,^[10] which does not require the use of a machine to administer, monitor or interpret)." *Rouleau, Unreliability of the Horizontal Gaze Nystagmus Test*, 4 Am Jur. Proof of Facts 3d 439 § 10, p. 458 (1989).

The court in *Witte* concluded that the HGN test was scientific evidence, stating: "Alcohol's effect on a person's sense of balance is common knowledge. The same cannot be said for HGN. The HGN test is based upon scientific principles and exceeds common

¹⁰ Babinski's reflex has been so explained: "[W]hen the sole of the foot is stroked from the heel toward the little toe, all five toes tend to flex or bend down. However, in certain diseases of the brain and spinal cord, . . . stimulation of the sole causes the big toe to extend or bend upward, and the other toes to bend down and spread or fan out." *Schmidt's Attorneys' Dictionary of Medicine*, B-2 (1992).

knowledge." *Id.* The *Witte* court, while noting that the authorities were not unanimous that the test was reliable, remanded that case back to the trial court for a determination of whether the test was sufficiently reliable and whether it was generally (not unanimously) acceptable in the scientific community.

In holding HGN was a scientific test, the California Supreme Court in *People v. Leahy, supra*, noted:

First, we should make clear that "general acceptance" does not require unanimity, a consensus of opinion, or even majority support by the scientific community. . . .

. . . .

In determining whether a scientific technique is "new" . . . long standing use by police officers seems less significant a factor than repeated use, study, testing and confirmation by scientists or trained technicians.

Id. at 329-32.

In *Leahy*, the State argued that HGN testing was not a scientific test, but merely a road test. The California court rejected the State's position, holding that it is in fact a scientific test. After listing states that had accepted HGN testing as valid scientific tests, the court went on to note:

The foregoing decisions, however, do not explain how police officers are competent to establish general acceptance of HGN testing *in the scientific community, or how they are qualified to relate the scientific bases underlying the nystagmus test.* [Some emphasis added.]

Id. at 334. The court, quoting from *People v. Williams*, 5 Cal. Rptr. 2d 130 (1992), then noted:

". . . Being qualified to attribute the observed eye movements to a particular cause, however, is a far different matter. . . .

Vega's [the police officer's] opinion that appellant was under the influence of alcohol, to the extent it was based on the nystagmus test, rests on scientific premises well beyond his knowledge, training, or education. Without some understanding of the processes by which alcohol ingestion produces nystagmus, how strong the correlation is, how other possible causes might be masked, what margin of error has been shown in statistical surveys, and a host of other relevant factors, Vega's opinion on causation, notwithstanding his ability to recognize the symptom, was unfounded. It should have been excluded."

Id. The California court then opined that "testimony by police officers regarding the mere *administration* of the test is insufficient to meet the general acceptance standard required by *Kelly*." (*People v. Kelly*, 549 P.2d 1249, is the California equivalent of Maryland's *Reed v. State, supra*, 283 Md. 374.) (As we shall hereafter take judicial notice of the reliability and acceptability in the relevant communities of HGN testing generally, the *Leahy* court's (and the *Williams* court's) holding that officers cannot generally establish the foundational scientific reliability of the test will not be of direct importance to our subsequent determination.)

Pennsylvania courts have noted that scientific evidence is "evidence that draws its convincing force from some principle of

science, mathematics and the like." *Commonwealth v. Miller*, 532 A.2d 1186, 1188 (Pa. Super. 1987). The *Miller* court noted that a proper *Frye* foundation must be laid before such evidence may be admitted. "[T]he rationale for subjecting motorists suspected of driving under the influence of alcohol to the HGN test derives from the scientific principle that consumption of alcohol causes nystagmus." *Id.* at 1189. In *Commonwealth v. Apollo*, 603 A.2d 1023 (Pa. Super.), *alloc. denied*, 613 A.2d 556 (Pa. 1992), the Pennsylvania court again confirmed that a proper foundation must be laid before HGN test results may be admitted in the courts of that state. In *Apollo*, the State attempted to lay a *Frye* foundation by introducing the testimony of a single expert, an optometrist who was also a certified instructor in respect to HGN testing. The court, in holding that a proper foundation had not been laid, noted:

Dr. Sisson conducted his own study of the incidence of gaze nystagmus in "sober" persons. His study indicated that approximately one in five hundred sober patients would fail the HGN test, in contrast to national studies which have estimated a failure rate of two to four percent in a similar population. Dr. Sisson testified that he was aware of no studies evaluating the reliability of the HGN test that have reached any conclusion other than that it is the most accurate field sobriety test available.

Id. at 1027. See also *Commonwealth v. Moore*, 635 A.2d 625 (Pa. Super. 1993).

We join the states of Arizona, Alabama, California, Georgia, Illinois, Kansas, Louisiana, Minnesota, Missouri, Montana, Nebraska, North Dakota, Oregon, Pennsylvania, Texas, Washington, and West Virginia¹¹ and hold that *HGN is a scientific test*. In so holding, we note our awareness that the courts in Ohio, Arkansas, Iowa, and South Carolina – the only states that we are aware of that have held that the HGN test is not scientific because it is merely a "field test," have deemed the test results admissible without requiring a foundation.

We shall further hold, however, that the results of HGN tests are, nevertheless, admissible in the trial courts of this State without further reference to the *Frye/Reed* standard. We take judicial notice of the reliability and acceptance of the HGN test. We perceive that the studies, scientific articles, foreign cases, and other literature on the subject that we have reviewed reveal that most courts and scientific authorities have held the tests reliable if properly administered. The cases also reveal a general trend in admissibility determinations towards emphasizing the qualifications of the person administering the test. That evolution of emphasis from the scientific framework of the test itself to the qualifications of those who administer it is where we

¹¹ The American Bar Association states in the videotape we have referred to, *supra*, that the test has been accepted in all fifty states. Apparently it refers to trial court acceptance as we have found no prior Maryland appellate cases on the subject.

feel the focus should now be. We address judicial notice first, and then the matter of the officer's qualifications, both generally and specifically.

Judicial Notice

In *Faya v. Almaraz*, 329 Md. 435, 444-47 (1993), the Court of Appeals held:

[I]n order to place a complaint in context, we may take judicial notice of additional facts that are either matters of common knowledge or capable of certain verification. Included in the latter category are facts "capable of immediate and certain verification by resort to sources whose accuracy is beyond dispute." In the medical context we have relied, for example, on basic information about sexually transmitted diseases as found in medical journals and reports of the Centers for Disease Control. See *B.N. v. K.K.*, 312 Md. 135, 139-40, 538 A.2d 1175 (1988) (genital herpes is a contagious, painful, and incurable disease, spread by sexual contact, that endangers public health). The Maryland Court of Special Appeals has relied on similar sources to assess the need for precautions against AIDS transmission. . . .

Before examining the legal sufficiency of the appellants' complaints, therefore, we focus on several well-established and scientifically understood facts about AIDS and its transmission. . . .

. . . .

These characteristics of HIV and AIDS, which the lower court also recognized, are proper objects of judicial notice. We, therefore, reject the appellants' threshold contention that the court below . . . erroneously adopted . . . information that [was] properly the subject of expert testimony, open

to challenge at trial. . . . These facts derive from reputable scientific journals and institutions and are well-accepted within the medical community. [Citations and footnotes omitted.]

See also *B.N. v. K.K.*, 312 Md. 135, 139-40 (1988), taking judicial notice that "[g]enital herpes is . . . contagious, painful, and incurable . . . spread by sexual contact. It is an infectious disease that endangers public health." (Footnotes omitted.); *Keene Corp. v. Hall*, 96 Md. App. 644, 660, *cert. denied*, 332 Md. 741 (1993), an asbestos case, in which we held the *Frye/Reed* standard had not been met in respect to the test there at issue, but took "judicial notice that inanimate material and tissue from human beings have different properties." We took notice of certain medical and scientific facts in regard to the wearing of gloves by court personnel dealing with defendants believed to have AIDS in *Wiggins v. State*, 76 Md. App. 188, 198 (1988), *rev'd on other grounds*, 315 Md. 232 (1989), though we made no formal announcement that we were taking judicial notice of those scientific facts.

Judge Getty for this Court, in one of the first cases involving genetic marker blood testing, *Haines v. Shanholtz*, 57 Md. App. 92, 97-100, *cert. denied*, 300 Md. 90 (1984), discussed in depth *Reed v. State, supra*. He stated that unlike *Frye*, *Reed* has survived *Daubert, supra*. He noted that the issue in *Reed* (voice prints) was not, at the time of that case, generally accepted as scientifically reliable; "the

Court of Appeals in *Reed* was dealing with an acknowledged division in the scientific community" *Id.* at 98. He further commented that the Court of Appeals, even in its *Reed* decision, recognized the feasibility of taking judicial notice of accepted scientific facts, noting:

In *Reed*, (voice print), authored by Judge Eldridge, the Court stated that a trial court may take judicial notice of the reliability of a scientific technique if it is generally accepted in the scientific community.

Id. at 97. The *Reed* Court had stated, "On occasion, the validity and reliability of a scientific technique may be so broadly and generally accepted in the scientific community that a trial court may take judicial notice of its reliability. Such is commonly the case today with regard to ballistics tests, fingerprint identification, blood tests, and the like." 283 Md. at 380.

In *Sharp v. Sharp*, 58 Md. App. 386, 396 (1984), we noted:

"Judicial notice of a fact is an acceptable substitute for formal proof of such fact, when formal proof is clearly unnecessary to enhance the accuracy of the fact-finding process." *See also Mark Downs, Inc. v. McCormick Prop.*, 51 Md. App. 171, 187 (1982) (assuming it proper to take judicial notice that tropical storm "David" was an "Act of God.")

Maryland Rule 5-201 continues the long-standing practice of allowing an appellate court to take judicial notice of adjudicative

facts that are "capable of accurate and ready determination by resort to sources whose accuracy cannot reasonably be questioned." In the case *sub judice*, the "fact" at issue is whether the HGN test is generally accepted in the scientific community as a reliable indicator of an increased blood alcohol content. There are a number of sources that may be consulted to determine that issue, including scientific journals and other such literature. Because the test is so frequently, even predominantly, used in a forensic setting, however, there is another, equally reliable, source – the holdings of other courts that have examined the question.

It is not a precondition to taking judicial notice at the appellate level to "reinvent the wheel" in every case. If a sufficient number of courts have examined the relevant evidence presented on the issue in other cases and have concluded from that evidence that the test is, or is not, generally accepted in the scientific community, there is no reason why we have to insist that the same evidence be presented again in the case before us. We can draw our own conclusions from the collection of holdings of our sister (or brother) courts, including those that have found a sufficient basis for taking judicial notice.

In *People v. Buening*, 592 N.W.2d 1222 (Ill. App. 5 Dist.), *cert. denied*, 602 N.E.2d 460 (1992), the court discussed those cases that had held that HGN testing was merely "field testing" and those that had held that it was scientific. (The trial court had not allowed

the evidence on the grounds that its prejudicial effect outweighed its probative value). The appellate court resolved the issue for the prosecution by, in effect, taking judicial notice of the reliability of the test. After discussing several of the cases from other states, emphasizing *Superior Court, supra*, and noting the reports of the United States Department of Transportation as cited in *Bresson, supra*, the Illinois Court held:

Such factors in conjunction with the reasoning in *State v. Superior Court*, lead us to believe the HGN test meets the standards of admissibility under *Frye* and HGN test results may be admitted as evidence of intoxication as long as a proper foundation for admitting such evidence has been laid. A proper foundation should consist of describing the officer's education and experience in administering the test and showing that the procedure was properly administered.

Id. at 1227. The *Buening* court did note that it was not accepting HGN testing to qualify the exact amount of alcohol (BAC) in a defendant's blood in the absence of a chemical analysis of blood, breath, or urine. Thus, it held that the results are admissible in regard to the presence of alcohol, generally, when chemical tests do not exist, and, additionally, when chemical tests do exist, to corroborate or attack that chemical analysis.

The appellate court for the Fourth District of Illinois, in *People v. Hood*, 638 N.E.2d 264 (Ill. App. 4 Dist. 1994), adopted the *Buening* holding in applying that state's implied consent statute and

took judicial notice of the reliability of the HGN test, primarily basing its holding on *Buening*:

As the fifth district determined the HGN test was sufficiently reliable to meet the *Frye* standard . . . in criminal proceedings, we are persuaded it is sufficiently reliable to be admitted in implied-consent proceedings; thus, where evidence involving the HGN test is sought to be admitted in implied-consent proceedings, the State need not call an expert witness to attest to its reliability.

Id. at 274.

In *State v. Armstrong*, 561 So.2d 883, 887 (La. App. 2 Cir. 1990), *writ denied*, 568 So.2d 1077 (La. 1990), the court essentially took judicial notice of the reliability and acceptance of the HGN test by adopting the *Superior Court* holding:

We choose to follow the reasoning in *State v. Superior Court, County of Cochise, supra*, that the HGN test meets the standards of admissibility in *Frye* and, with a proper foundation, may be admitted as evidence of intoxication. We also follow the reasoning of . . . *Superior Court* . . . and its progeny, in finding that a proper foundation for admitting the test has been laid when a showing has been made that the *officer . . . was trained in the procedure, was certified in its administration and that the procedure was properly administered.* [Emphasis added.]

The Court of Criminal Appeals of Alabama in *Malone v. City of Silverhill, supra*, 575 So.2d 101, essentially took judicial notice of the reliability of HGN tests when it opined: "The fact that nystagmus

can be caused by the consumption of alcohol is also accepted by the medical profession." *Id.* at 102. It continued:

Its [the HGN test's] use became so widespread that the United States Department of Transportation outlined the appropriate procedures for administering the test, in its National Highway Traffic Safety Administration Bulletin DOT HS 806 512.

Id. at 103. Then, it opined that the Arizona Court in *State v. Superior Court, supra*, had held, "after extensive research . . . there had been sufficient scrutiny of the effects of alcohol on nystagmus to permit a conclusion as the reliability of the HGN test." *Id.* at 103. The Alabama court then held that "we are satisfied that the holding of the Arizona Supreme Court is a correct one. We, therefore, adopt this standard as our own."

Thereafter, the Supreme Court of Alabama reversed the Court of Criminal Appeals of Alabama in *Ex parte Malone, supra*, 575 So.2d 106. It appears to have rejected the intermediate appellate court's ultimate holding that the error was harmless and accepted that court's second position that the trial court erred in permitting the officer to testify as to HGN testing without having laid a *Frye* foundation in the case. It did not address the intermediate court's apparent judicial notice and adoption of the *Superior Court* holding. In any event, the adoption language of the intermediate court remains hanging in legal limbo and, apparently, is inoperative in view of the higher court's resolution.

In *State v. Bresson, supra*, 554 N.E.2d 1330, the Ohio Supreme Court took judicial notice of the reliability of HGN testing. An intermediate appellate court had reversed a trial court opinion on the basis that the trial court had permitted evidence of HGN testing without there having been any foundation laid as to its reliability. The *Bresson* court noted that Ohio does not apply the *Frye* standard and acknowledged that no foundation had been laid at trial. It then opined that most of Ohio's intermediate appellate courts had allowed such evidence based only on an officer's testimony, on the grounds that HGN testing was merely another field test. The court then noted a split among other jurisdictions as to whether the test was a scientific test. Without deciding whether it was or was not a scientific test, and with no foundation having been laid in the case before it, the Ohio court, relying on the decisions of the courts of other states, and on its own intermediate appellate court, opined, at 1334:

We find that the HGN test has been shown to be a reliable indicator of BAC levels. Accordingly, results of this test are admissible so long as the proper foundation has been shown both as to the officer's training and ability to administer the test and as to the actual technique used by the officer in administering the test.

The Supreme Court of Montana, applying its rules of evidence and discounting *Frye*, adopted the holdings of the appellate courts of Texas, Arizona, and Illinois in its case of *State v. Clark, supra*, 762

P.2d at 856. It opined that the "better approach is to admit all relevant scientific evidence in the same manner as other expert testimony and allow its weight to be attacked by cross-examination" It ruled that the "pivotal question now becomes one of proper foundation." *Id.*

In *Emerson v. State, supra*, 880 S.W.2d 759, the *en banc* court took judicial notice of the reliability of the theory underlying HGN testing and of its technique as to indicate the general presence of alcohol but not as it related to specific BAC. The court rejected the State's assertion that HGN test results should be admitted merely as opinion evidence, stating: "[T]he HGN test . . . is based on a scientific theory." The court then held:

Judicial Notice

. . . In the instant case, however, the trial court made no such inquiry concerning the admissibility of the HGN evidence Therefore, we now inquire into the reliability of the HGN test pursuant to the doctrine of judicial notice.

We are authorized to take judicial notice of any scientific fact which "is capable of accurate and ready determination by resort to sources whose accuracy cannot reasonably be questioned." *McCormick on Evidence* at § 330. The concept of judicial notice extends to scientific techniques and principals.

Once a scientific principle is sufficiently established, a court may take judicial notice of the validity of that principle. . . .

. . . .

. . . By examining scientific articles outside the record of the instant case, we can determine what course of action to take with regards to the reliability of the HGN test.

Id. at 764-65 (citations and footnote omitted). The court noted that HGN testing had, under various studies,¹² been found to be 77% accurate standing by itself, and when used with other field tests, as high as 88% accurate. It then noted that other jurisdictions had found the test sufficiently reliable, citing *Superior Court, supra; Bresson, supra; Murphy, supra*, and *Clark, supra*, before holding, at 768-69:

After consulting the literature . . . and considering case law from other jurisdictions . . . we conclude that the theory underlying the HGN test is sufficiently reliable The scientific materials addressing the issue have reached the uniform conclusion that the consumption of alcohol has a cognizable effect on human eye movement. We believe that the

¹² Accuracy has been determined by comparing the HGN testing results with subsequent verification through chemical testing or through testing persons with a known blood alcohol content. Most studies, though varying slightly, result, generally, in accuracy levels of just under 80% if the HGN test is the only test administered. If combined with the other two tests in the NHTSA Standardized tests (walk and turn and balance), most studies indicate a reliability factor of between 85% to 90%. The various studies and articles we have reviewed include: Edward B. Tenney *The Horizontal Gaze Nystagmus Test and the Admissibility of Scientific Evidence*, 27 New Hampshire Bar Journal, 179 (Spring 1986) (Tenney noted that results from some agencies indicate a considerably higher reliability: Arlington County Police Force (345 arrests) 84%, Maryland State Police (451 arrests) 92%, North Carolina State Police (434 arrests) 91%); Theodore E. Anderson *et al. Field Evaluation of a Behavioral Test Battery for DWI*" NHTSA Report DOT HS-806-475 (1983) (HGN tests performed on 1,506 drivers stopped for DWI during a three-month period. HGN deemed 82% accurate when used by itself in predicting BAC over .10.)

accuracy of those sources cannot be reasonably questioned.

Technique

We also conclude that the technique employed in the HGN test, as designed and promoted by NHTSA, is reliable In this jurisdiction, officers who administer the HGN test receive standardized training in its administration. . . . The test procedures . . . require an officer to screen for factors other than alcohol . . . such as other drugs, neurological disorders, and brain damage, prior to administering the HGN test. . . . We take judicial notice of the reliability of both the theory . . . and its technique.

We are unable to conclude, however, that the HGN technique is a sufficiently reliable indicator of *precise BAC* [blood alcohol content]. [Citation and footnote omitted.]

See also Anderson v. State, 866 S.W.2d 685 (Tex App. - Houston [1st Dist.] 1993); *City of Fargo v. McLaughlin*, 512 N.W.2d 700, 706 (N.D. 1994) (the North Dakota Supreme Court took judicial notice that intoxicated individuals exhibit nystagmus).

We note with some caution the dissent in *Emerson, supra*, which initially noted that, by taking judicial notice of the reliability of HGN testing and technique, the appellate court had relieved the State of its burden of establishing the reliability of the test at trial. We acknowledge that we, in taking judicial notice of the reliability of the test (though we reverse in respect to the qualifications of the officer), are likewise relieving the State of that burden. We shall, nevertheless, take judicial notice that HGN

testing, a scientific test, is sufficiently reliable and generally accepted in the relevant scientific community. We do so considering the great weight of scientific support in the literature and in light of its adoption in most other jurisdictions that have addressed the issue.

To do otherwise at this stage in the development of the science would leave to individual courts within the twenty-three jurisdictions of this State (and the various courts and judges within each jurisdiction) to determine, on a case-by-case basis, the scientific reliability of the test. In each of the various jurisdictions, the determination of the reliability and acceptability of such evidence would depend upon the competence, energy, and schedules (and even the budgets) of the various prosecutors throughout the State in obtaining, and producing the attendance of experts at the thousands of trials involving alcohol related offenses in which HGN testing is sought to be admitted. Disparate results and decisions might result in many instances, not from the actual scientific reliability of the tests themselves, but from the differing abilities and resources of prosecutors and the availability of witnesses from the scientific community.

As we have attempted to show, the great weight of scientific literature supports its reliability and the majority of jurisdictions around the country have declared HGN testing to be reliable. We take judicial notice that the results of HGN testing, if the

test is properly given by a qualified officer, are admissible to indicate the presence of alcohol in a defendant.

Officer Qualifications

Before we discuss case law from other jurisdictions that refers to officer qualifications to administer the HGN test and to present testimony relative thereto, and the training, qualifications, and certification programs available in Maryland, we shall briefly describe the evidence presented at trial in respect to Officer Rossiter's qualifications.

Officer Rossiter testified that he had been a Hagerstown police officer for just under five years and that he was a duly qualified and certified *radar* operator using properly calibrated and certified *radar* equipment. He additionally testified:

A. I asked him to exit the vehicle to perform some field sobriety tests

Q. Have you receive training in how to conduct field sobriety tests?

A. Yes.

Q. Where . . . ?

A. Western Maryland Police Academy.

Q. Five years ago?

A. Yes, sir.

Q. . . . [H]ave you had occasion to use field sobriety tests on other occasions?

A. Yes, sir.

. . . .

A. Close to 100 [times].

Q. . . . [W]hat is the purpose . . . in giving somebody field sobriety tests?

A. To check the subject's coordination and see if they can do two things at once. . .

.

. . . .

A. See if the person is able to pay attention

Q . . . [W]hat [referring to the case *sub judice*] was the first test that you gave . . . ?

A. . . . [T]he horizontal gaze nystagmus.

. . . .

It tests the eyes, the muscles in the eyes as to how lax or smooth that the eyes can follow an object as it's passed in front of them.

Q. Would you demonstrate how that test is performed?

MR. SALVATORE [appellant's trial counsel]. Your Honor, I'm going to object. That test has never been proven to be reliable in the State of Maryland.

THE COURT: Overruled. The weight to be given to the test will be for the jury.

. . . .

A. . . . The point of it is, with the alcohol, it's a depressant and relaxes the muscles. . . .

MR. SALVATORE: Objection, unless he's *qualified* to say that. [Emphasis added.]

THE COURT: I'll overrule the objection.
You may proceed.

Officer Rossiter then described the tests. Later, he was asked:

Q. And was he able to pass the test?

A. No, he did not.

MR. SALVATORE: Objection as to passing or failing.

THE COURT: Overruled.

When the officer began to describe the six-point scoring system for the test, appellant's counsel again objected: "Objection He's reached a conclusion and hasn't given any of the underlying basis for reaching that conclusion." The court overruled the objection. As the discussion of "points" continued, appellant again, unsuccessfully, objected as to a lack of foundation. Later, Rossiter's direct examination continued:

Q. And who assigns the points?

A. . . . [T]he Alcohol Influence Board.^[13]

Q. . . . Somebody out there assigns how you're supposed to score the test?

A. Right.

MR. SALVATORE: Objection. It's leading.

THE COURT: Overruled.

Q. Do you receive instruction on how to score this test?

¹³ The precise function of the Alcohol Influence Board, if it exists, is unclear.

A. I was instructed in the Western Maryland Police Academy how to do it. I'm not a certified instructor to do it.

Q. But have you been taught how to perform the test?

A. Yes.

Appellant, in his brief, noted that he had objected to the officer's lack of qualifications, arguing:

It must also be shown that the test was given in precisely the prescribed manner and that the tester was qualified to both administer the test and interpret the results. Officer Rossiter did none of these and should not have been permitted to testify regarding the Horizontal Gaze Nystagmus Test.

Foreign Case Law

The court in *Emerson, supra*, noted that Texas police officers must be certified in order to administer the test and must "complete an NHTSA-approved, State-sponsored training course" 880 S.W.2d at 766. The Texas course consists of forty hours (twenty-four hours of classroom instruction and sixteen hours of field evaluation). During the sixteen-hour field evaluation, the officer must complete and document thirty-five HGN test cases. Upon completion of the thirty-five HGN test cases, the results are submitted for the approval of the Texas Engineering Extension Service, Law Enforcement Training Division. If the results are

satisfactory, the officer is then given a "proficiency certification" by the Texas Commission on Law Enforcement Officer Standards and Education.

The Supreme Court of Iowa, in *State v. Murphy, supra*, 451 N.W.2d at 156, recognized that Iowa's rules of evidence did not require strict adherence to a *Frye* standard, only that the reliability of the evidence be established. It noted that reliability was a necessary prerequisite for admission "because unreliable evidence cannot assist a trier of fact." *Id.* at 156-57. While joining the Ohio courts in holding that HGN testing is no more scientific than general field sobriety testing, the court emphasized the training of the police officer there involved and his testimony. The officer was an eleven-year veteran who had participated in specialized training in the administration of the HGN test. He was also certified by the Iowa Law Enforcement Academy as an instructor. The court concluded "that testimony by a properly trained police officer with respect to the administration and results of the horizontal gaze nystagmus test is admissible without need for further scientific evidence." *Id.* at 158.

In *State v. City Court*, 799 P.2d 855, 860 (Ariz. 1990), the Arizona Supreme Court noted that it had previously decided that the HGN test was generally accepted in the relevant scientific community and, in light of that, opined:

The proper foundation for such testimony, . . . includes a description of the officer's training, education, and experience in administering the test and a showing that the test was administered properly.

The Court, in *Clark, supra*, opined:

Deputy Irby testified he was certified through the Montana Law Enforcement Academy, completing the required number of training hours. Further, Deputy Irby testified he administered the test in the proper manner. No other foundation need be shown.

762 P.2d at 857.

The qualifications of the officer were directly challenged in *State v. Garrett*, 811 P.2d 488, 491 (Idaho 1991), where the court first held that HGN testing satisfies the *Frye* standard, noting that courts in Alaska, Arizona, Iowa, Louisiana, Montana, Ohio, and Texas had accepted it. The *Garrett* court then held that the expertise of the testing officer was first an issue for the trial court to resolve, noting that the officers there had been sufficiently qualified:

Fost [the officer] is attached to the Select Traffic Enforcement Team. . . . Fost is also an instructor in the use of field sobriety tests. Fost was trained by members of the Idaho State Police, and he also attended seminars conducted by Dr. Marcelline Burns of the Southern California Research Institute (SCRI). Dr. Burns worked with the NHTSA to develop reliable field sobriety tests, and was one of the designers of the test Even though the testimony elicited from Fost concerning the correlation between nystagmus and blood alcohol content was improper, the court never-

theless properly admitted Fost's expert testimony on the administration of the HGN test.

Id. at 492-93 (citation omitted).

The *Armstrong* court held that a proper foundation had been laid for the introduction of the HGN test results in light of the officer's experience, training, and certification in respect to the test, and given that the evidence reflected that the test had been properly administered. *See also State v. Regan*, 601 So.2d 5 (La. App. 3d Cir. 1992), *writ denied*, 610 So.2d 815-16 (1993). In *State v. Garris*, 603 So.2d 277 (La. App. 2d Cir.), *writ denied*, 607 So.2d 564 (La. 1992), the court concluded that a sufficient foundation had been laid in that there was evidence that the officer had received HGN training, both in the Air Force, as a narcotics patrolman, and as a state trooper, that he had conducted HGN tests under supervision during the training, and that the officer had conducted the test properly. The court held that he had presented sufficient evidence of his qualifications, even though the officer never specifically stated that he was "certified." *Id.* at 281. In *State v. Breitung*, 623 So.2d 23 (La. App. 1 Cir.), *writ denied*, 626 So.2d 1168 (La. 1993), the evidence indicated that the officer had been trained in administering the HGN test; he had attended a two-week course that included actual practice tests on subjects and had been certified. The officer had administered the test to numerous other suspects and there was evidence that the tests had been properly administered. The court

held that a proper foundation had been laid. In *Bresson, supra*, the court noted that the trooper had testified

that he had received five days of training regarding the HGN test and described the methods he used in testing and evaluating appellee's performance His testimony . . . corresponds to the testing methods devised by the United States Department of Transportation.

The court held:

[T]he only requirement prior to admission is the officer's knowledge of the test, his training, and his ability to interpret his observations.

Id. at 1334-36.

In the case *sub judice*, the record is, at best, minimal in regard to the level of Officer Rossiter's training. He was asked if he had received training in the general area of "field sobriety testing." He responded that he had trained at the Western Maryland Police Academy five years prior to testing appellant, but did not specify whether that training included testing for HGN. Again, he testified generally that he had performed field tests approximately 100 times but did not specify what experience he had had with HGN. Later, he responded that he "was instructed in the Western Maryland Police Academy how to do it. I am not a certified instructor to do it."

We have no way of knowing from the record the extent of the officer's actual HGN training, whether it was proper, whether it was supervised by certified instructors, or even whether Officer

Rossiter was certified to administer the test. We hold, therefore, that a sufficient foundation as to the officer's qualifications to administer the test was not submitted below. His testimony should not have been allowed over the objection of appellant. In allowing this testimony, the trial court erred.

We also note that, while the officer discussed how the actual test was performed, other than noting that appellant did not wear contacts, the officer's testimony is silent as to whether he checked for tracking and different size pupils, etc., designed to reduce the chances that nystagmus from non-alcoholic causes might be confused with alcohol-related nystagmus. The trial court thus also erred in admitting the testimony in that there was insufficient evidence that the proper precautions were taken or the proper considerations were accounted for prior to the administration of the test itself. This is especially important given the many other *possible* causes of HGN contained in the mass of literature we have reviewed.

The cases and literature indicate that, in addition to alcohol, many other factors have been *mentioned* as a possible cause of nystagmus. They include: (1) problems with the inner ear labyrinth; (2) irrigating the ears with warm or cold water under peculiar weather conditions; (3) influenza; (4) streptococcus infection; (5) vertigo; (6) measles; (7) syphilis; (8) arteriosclerosis; (9) muscular dystrophy; (10) multiple sclerosis; (11)

Korchaff's syndrome; (12) brain hemorrhage; (13) epilepsy; (14) hypertension; (15) motion sickness; (16) sunstroke; (17) eye strain; (18) eye muscle fatigue; (19) glaucoma; (20) changes in atmospheric pressure; (21) consumption of excessive amounts of caffeine; (22) excessive exposure to nicotine; (23) aspirin; (24) circadian rhythms; (25) acute trauma to the head; (26) chronic trauma to the head; (27) some prescription drugs, tranquilizers, pain medications, anti-convulsants; (28) barbiturates; (29) disorders of the vestibular apparatus and brain stem; (30) cerebellum dysfunction; (31) heredity; (32) diet; (33) toxins; (34) exposure to solvents, PCBs, dry cleaning fumes, carbon monoxide; (34) extreme chilling; (35) eye muscle imbalance; (36) lesions; (37) continuous movement of the visual field past the eyes, *i.e.*, looking from a moving train; (38) antihistamine use. *See State v. Witte, supra; State v. Clark, supra; State v. Superior Court, supra; Mark A. Rouleau, Unreliability of the Horizontal Gaze Nystagmus Test, 4 Am. Jur. Proof of Facts 3d 439 (1989); Louise J. Gordy & Roscoe N. Gray, 3A Attorney's Textbook of Medicine §§ 84.63 and 84.64 (1990), and other cases and treatises hereinbefore mentioned.*

No chemical test was administered to appellant in the case *sub judice*. Evidence was proffered by appellant as to injuries that may have affected his ability to perform certain of the other field tests, and there was also evidence that the odor of alcohol smelled

by Officer Rossiter may have come from a source other than appellant. Accordingly, we are unable to say that the error was harmless.¹⁴

We reverse appellant's convictions on the charges of driving under the influence of alcohol and driving with alcohol in his blood in violation of a court ordered alcohol restriction on his driver's license. We affirm his other conviction for speeding, as it is not otherwise challenged on appeal.

Because appellant's second issue as to the trial court's questions relates only to the matter of HGN testing and we are reversing his alcohol-related convictions, we shall not address that question.

JUDGMENT OF CONVICTION FOR SPEEDING AFFIRMED; ALL OTHER JUDGMENTS OF CONVICTION REVERSED; COSTS TO BE PAID 20% BY APPEL-

¹⁴ We note that, after it had returned to deliberate, the jury sent three questions to the court:

1. Was the Defendant asked to take a Breathalyzer Test?
2. If the Defendant refused what is the action taken?
3. Or if he took the test what [were] the results[?]

The questions were not answered and the jury was directed not to speculate.

LANT AND 80% BY WASHINGTON COUNTY, APPEL-
LEE.¹⁵

¹⁵ The NHTSA provides a manual (written in large part by 1st Sgt. Tower of the Maryland State Police) entitled "DWI Detection and Standardized Field Sobriety Testing Student Manual" that is apparently utilized by the Maryland State Police in its training programs. It contains much information in respect to training, administering the HGN test and protocols designed to assure that the presence of HGN is not caused by factors other than the presence of alcohol. Satisfactory completion of the program results in certification and the program is open to officers of other agencies.