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William K. McCarter

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Legal Aspects of Police Radar

*William K. McCarter**

BEFORE LOOKING into some of the legal aspects of "radar" in regard to speeding violations, it might be well to point out something about how this type of radar functions. It should be noted that "police type" radar is not the same radar that saw its phenomenal growth and development during the Second World War and has since become a device of extreme precision and accuracy. The "pulse type" radar developed and used by the military operates by sending out a beam of radio waves in regular intervals which are reflected or bounced back to the receiver by the object detected. The waves move in both directions at the speed of light. Thus, the computation between the time of sending out and receiving back gives the position and the movement of the object detected. Police radar uses a similar but distinct method in which a continuous beam of high frequency radio waves are sent out at a fixed frequency. When the waves strike a moving object, the frequency is changed in ratio to the speed of the object intercepted. By measuring this change of frequency, the speed of the object intercepted may be determined. Police type radar is properly termed "Doppler Effect" Radar and is not the progeny of "pulse type" radar. The Doppler Effect is a familiar experience. All of us have experienced that the pitch of a sound depends upon the relative motion of source and observer. As a siren approaches us it rises in pitch, and as it passes it falls in pitch.¹ This principle was first applied to the automobile by traffic engineers who used "Doppler effect" radar units to study road conditions in relation to speed on curves, intersections, grades, et cetera.

Some of the differences between military "pulse" radar and "police type" radar are worth noting. Police type radar does not send out signals at regular intervals but sends out a continuous signal. Therefore "police type" radar will not electronically record the distance from the set to the vehicle being clocked. It is also incapable of measuring either time or distance. Speed is not determined by formula or otherwise from time and distance relationships. The narrowly adjusted beam does not avoid hitting other objects ahead or behind its path. The military "pulse" radar has seen a great deal more research and work. Police type radar has limitations of physical size, cost, weight, mobility and engineering expediency that have resulted in compromises in its design

* B.S.S., M.A., John Carroll Univ., J.D. (June 1967), Cleveland-Marshall Law School of Baldwin-Wallace College.

¹ Hastings, *The Physics of Sound*, 56 (1960); *Electronics World* "Doppler Radar in Weather Research," 45 (Vol. 73, No. 5, May, 1965); 49 A.L.R.2d 470 (1965).

that can affect its accuracy.² There is a conceded engineering tolerance of approximately two miles per hour in the police radar units.³

As a vehicle approaches the radar unit, it enters its operating zone or "zone of influence." The length and width of the zone depends on such factors as the strength of the signal and the transmitter height above the ground. The unit will record the speed of only one vehicle at a time, determined by the vehicle presenting the best target by reason of reflecting surface, position, or speed.⁴ Based on this, many courts have pointed out possible defenses to proof of speed by radar. One court has stated in its opinion there are many more defenses that can be interposed to radar speed interception than to motorcycle apprehension.⁵

The Early Cases

The use of radar speedmeters to catch speeding violators got an extensive start in the early 1950's. The early cases held that when data procured by a radar device were offered in evidence, expert testimony to establish the fact that radar equipment was a mechanism that correctly and accurately recorded the speed of passing vehicles was essential to a conviction.⁶

About 1955, the attitude of the courts began to change. The trend was that expert testimony was not essential to a conviction. The leading case seemed to be *State of New Jersey v. Dantonio*.⁷ In this case the court emphasized the coverage given to radar during World War II and how the public, while not understanding its intricacies, did not question its general accuracy and effectiveness. What the court did not point out was that the public usually falsely assumed that police and military radar were the same. The case held that evidence of radar speedmeter readings was admissible upon a showing that the speedmeter was properly set up and tested by the police officers without any need for the independent expert testimony of an electrical engineer as to its general nature and trustworthiness.

There followed a series of cases that held the usefulness of radar equipment for testing the speed of vehicles had become so well estab-

² 11 Am. Jur. Proof of Facts (Supp. 1966, at 34).

³ *People v. Nasella*, 3 Misc.2d 418, 155 N.Y.S.2d 463 (N.Y.C. Magis. Ct. 1956).

⁴ 11 Am. Jur. Proof of Facts (Supp. 1966, at 12-13).

⁵ *People v. Sachs*, 1 Misc.2d 148, 147 N.Y.S.2d 801 (N.Y.C. Magis. Ct. 1955).

⁶ *People v. Offerman*, 204 Misc. 769, 125 N.Y.S.2d 179 (Sup. Ct. 1953); *People v. Torpey*, 204 Misc. 1023, 128 N.Y.S.2d 864 (County Ct. 1953); *People v. Beck*, 205 Misc. 757, 130 N.Y.S.2d 354 (Sup. Ct. 1954), where it was held that the action of a judge in taking judicial notice of the operation and accuracy of a radar speedmeter was reversible error; *People v. Sarver*, 205 Misc. 523, 129 N.Y.S.2d 9 (Ct. of Spec. Sess. 1954).

⁷ 18 N.J. 570, 115 A.2d 35, 49 A.L.R.2d 460 (1955).

lished that the testimony of an expert to prove its reliability was not necessary and courts would take judicial notice of such fact.⁸

The Proper Test of Accuracy and Its Proof

While courts will take judicial knowledge of the usefulness of radar equipment to check the speed of vehicles, rendering the testimony of an expert to prove its reliability in this respect unnecessary, it is always necessary to prove the accuracy of the particular equipment used in testing the speed involved.⁹ The question then is, "What is the proper test of accuracy and proof?"

There are basically three methods of testing a radar unit for accuracy: internal tests, tuning fork tests, and road tests using a vehicle with a calibrated speedometer.

The internal tests are done by electronic experts working on the machine itself using test equipment and procedures to test such things in the instrument itself as the crystal detector, the cavity output, the frequency calibration, and the indicator calibration. The standards to which the indicator calibration should conform is a meter indication within 1 per cent for the entire range when varying the frequency of the voltage from the test oscillator from 73.1 to 731 cycles which corresponds to 10 miles per hour and to 100 miles per hour respectively.¹⁰ This type of test does not enter into court cases very often, since it is usually held that the test of accuracy must take place at the time the equipment was being used.¹¹

Tuning forks are available calibrated in almost all speeds from 15 mph to 100 mph in multiples of 5 mph. Thus, a tuning fork calibrated to 50 mph has a frequency of 50×7.31 . If the 50-mph fork is struck and placed in front of the transmitter receiver, the reading should be 50 mph on the meter scale.

It has been held that the testimony of an officer that he tested the radar device in question with tuning forks as recommended by the manufacturer and that he also ran a test car through the zone of influence or "the trap," and the meter read accurately, was sufficient

⁸ *Everight v. Little Rock*, 326 S.W.2d 796 (1959); *East Cleveland v. Ferrel*, 107 Ohio App. 256, 145 N.E.2d 134 (1957); *aff'd* 168 Ohio St. 298, 154 N.E.2d 630 (1958); *State v. Colla*, 24 Conn. Supp. 13, 185 A.2d 292 (Cir. Ct., App. Div. 1962); *U.S. v. Dreos*, 156 F.Supp. 200 (1957), D.C. case applying Maryland law in U.S. District Court; *State v. Graham*, 322 S.W.2d 188 (Mo.App. 1959); *People v. Magri*, 3 N.Y.2d 562, 147 N.E.2d 729, 170 N.Y.S.2d 335 (1958); *People v. Sachs*, *supra* note 5; *People v. Nasella*, *supra* note 3; *People v. Jamison*, 8 Misc.2d 408, 165 N.Y.S.2d 906 (County Ct. 1957); *Hardway v. State*, 302 S.W.2d 351 (Tenn. 1957); *Cromer v. State*, 374 S.W.2d 884 (Tex. Crim. App. 1964).

⁹ *Everight v. Little Rock*, *supra* note 8; *U.S. v. Dreos*, *supra* note 8; *People v. Sachs*, *supra* note 8; *Cromer v. State*, *supra* note 8.

¹⁰ *Op. cit. supra* note 2 at 32-33.

¹¹ *People v. Charles*, 15 Misc.2d 401, 180 N.Y.S.2d 635 (County Ct. 1958); *People v. Wylie*, 13 Misc.2d 310, 179 N.Y.S.2d 901 (County Ct. 1958).

foundation for admitting the graph from the device showing the defendant's excessive speed. The best evidence rule did not require that the graph made by the tuning forks and by the test car be introduced since the graph was mere confirmation of what the witness had observed.¹² The same jurisdiction held that the evidence of the accuracy test was insufficient where a test was made with 40 and 60 mph tuning forks but without the 80 mph tuning fork and without a run-through test with a car with a calibrated speedometer.¹³ A Missouri court reversed a conviction where the police officer testified that the only test made of the radar speedometer was with a tuning fork, and the accuracy of the fork used was not shown. The tuning fork test was not made at the site of the defendant's alleged offense at some unknown time. Neither was a "run-through" test with another vehicle going at a known speed made.¹⁴

The third way to check the accuracy of radar equipment is to run a vehicle with a calibrated speedometer through the trap and compare the speedometer reading against the reading on the radar meter. A conviction was sustained on the basis of a test by driving a highway patrol vehicle through the radar zone at varying speeds almost immediately before the arrest of the defendant.¹⁵ But a New York court held that a test of the radar equipment for accuracy by a vehicle's speedometer which itself had not been tested or, if tested, no proof thereof being introduced, did not constitute evidence of the accuracy of the radar equipment. It was admissible evidence but insufficient to sustain a conviction without additional evidence. Testing by the tuning fork method would, if offered, constitute additional evidence.¹⁶ The testimony of qualified observers would also constitute additional proof if the record showed the witness's expertise in judging speed, which means evidence based on specific experience and familiarity with motor vehicles and their speed and not the casual observation of general experience.¹⁷ A conviction for speeding was reversed where a police officer testified as to speed readings of a radar unit used in determining the speed of the defendant's vehicle and further testified that in order to test the radar unit he had driven a vehicle through the trap at 60 mph but gave no evidence as to the accuracy of the unit during the test. The court held that the accuracy of the radar unit on location was an essential element, and this had not been proven.¹⁸ A statement of the rule in the same jur-

¹² *State v. Lenzen*, 24 Conn. Supp. 208, 189 A.2d 405 (Cir. Ct. App. Div. 1962).

¹³ *State v. Carta*, 2 Conn. Cir. 68, 194 A.2d 544 (1962).

¹⁴ *City of St. Louis v. Boecker*, 370 S.W.2d 731 (Mo. App. 1963).

¹⁵ *State v. Graham*, *supra* note 8.

¹⁶ *People v. Johnson*, 23 Misc.2d 11, 196 N.Y.S.2d 227 (County Ct. 1960).

¹⁷ *People v. Fletcher*, 216 N.Y.S.2d 34 (County Ct. 1961).

¹⁸ *Wilson v. State*, 328 S.W.2d 311 (Tex. Crim. App. 1959).

isdiction was that the evidence to support a conviction was below the standard required when a police officer testified that he checked the radar unit after the arrest and at the end of test period, but the results of the tests were inadvertently not shown.¹⁹ However, here opinion testimony as to speed by the officers added sufficient testimony to result in a sustained conviction. A Virginia court held that testimony by an officer in the radar car that the test was made by having a fellow officer drive a patrol car through the trap at specified speeds was hearsay as to those speeds at which the fellow officer drove, and amounted to a mere surmise that the test for accuracy had been carried out.²⁰

Dr. John M. Kopper, a recognized authority in the field of electronics, has testified in several of the reported radar cases and has written many articles on the subject of "Doppler Effect" radar. In an article entitled "The Scientific Reliability of Radar Speedmeters,"²¹ he made some suggestions as to the correct procedures to use when operating radar. Dr. Kopper stressed the importance of checking the meter for accuracy *each* time it is set up for use. It should be checked at each site used, even if at more than one site on the same morning, to avoid the contention that the meter was thrown out of adjustment during transit. The meter should be checked before the beginning of the period of observation of a highway and at the end of the period. If there is a difference of more than two miles per hour between the meter and the test car's speedometer, steps should be taken to remedy the matter. Such a test naturally requires periodic checking of the speedometer of the test car.²²

Radar and Signs

Several other jurisdictions besides Ohio require signs to be posted when radar is in use. The object of the requirement of such posting is to eliminate the possible contention that the use of radar in the given situation is an entrapment.²³ Ohio's radar statute²⁴ requires the posting of an official "Speed Meter Ahead" sign not less than 750 feet nor more than 1500 feet ahead of any mechanical, electrical, or radar speed-timing device. What does this mean?

In 1953, when Ohio's radar statute was passed, the type of radar in use resulted in the radar transmitter and the point of measurement being coincidental. There was no problem, since the statute referred to

¹⁹ *Holley v. State*, 366 S.W.2d 570 (Tex. Crim. App. 1963).

²⁰ *Crosby v. Commonwealth*, 204 Va. 266, 130 S.E.2d 467 (1963).

²¹ 33 N.C.L. Rev. 343 (1954-55).

²² *Id.* at 353, see also *People v. Offerman*, *supra* note 6.

²³ *Royals v. Commonwealth*, 198 Va. 876, 96 S.E.2d 813 (1957); Opinion 3112, Ops. Att'y Gen. 524 (Ohio 1962).

²⁴ Ohio Rev. Code Sec. 4511.091.

the distance from the sign to the unit and the unit was the point of contact with the radar beam. But subsequent improvements have brought about a unit that can shoot its beam up the road several hundred feet. Does the statute then refer to the distance from the sign to the transmitter or to the point of contact with the beam? Richmond Heights' mayor's court convicted a motor vehicle operator for a speeding violation based on radar. At the trial the arresting officer testified that the one-man radar device was situated 1356 feet from the warning sign and that Cardwell was 346 feet past the sign when he was timed by the radar beam. Cardwell appealed the conviction to the Court of Common Pleas of Cuyahoga County on the ground that there was a 750-foot "zone of immunity" after the sign before a measurement of speed could be taken. Judge Saul S. Daneceau held that the legislative intent of 4511.091 O.R.C. was to establish such a "zone of immunity." The City of Richmond Heights appealed to the Court of Appeals, but the Common Pleas decision was upheld unanimously.²⁵ Based on this interpretation of the statute, police in Ohio should be required to prove exactly at what point along the road the vehicle of the defendant was timed.

Mark McElroy, as Attorney General, rendered an opinion on radar signs in which he stressed the legislative purpose in enacting the Ohio statute. He said it was clear that the legislative purpose was to prevent the use of radar and similar devices in such a fashion as would "trap" motorists. This purpose was accomplished by requiring the posting of signs, thereby requiring that "fair warning" must be given that the law is being enforced. The legislature, he reiterated, clearly intended to give the motorist reasonable notice of the use of such devices.²⁶

All the criteria for the reasonable posting of radar signs are not contained in the radar statute alone. Section 4511.09 O.R.C. calls for the adoption of a Manual of Uniform Traffic Control Devices²⁷ to apply to all traffic control devices erected in Ohio after its adoption. The original manual was adopted in 1956 and revised in 1962. Neither the original nor its revision mentioned the "Speed Meter Ahead" sign. But with the 1963 edition, it was placed in the section under "Regulatory Signs" with certain standards for its erection and use. Sections 4511.10 and 4511.11 require that all traffic control devices conform to the manual. It is generally held that no provision of the traffic laws for which signs are required may be enforced against an alleged violator if an official sign

²⁵ *City of Richmond Heights v. Cardwell*, Cuyahoga County Court of Appeals, No. 26964—unreported case.

²⁶ Opinion 3112, Ops. Att'y Gen. 524 (Ohio 1962) at 528.

²⁷ Ohio Manual of Uniform Traffic Control Devices for Streets and Highways, prepared by the Ohio Department of Highways, Division of Operations, Bureau of Traffic (1963). The manual conforms to the standard of the national manual on uniform traffic control devices as published by the U. S. Bureau of Public Roads in 1961.

is not in proper position and sufficiently legible to be seen by an ordinarily observant person.²⁸

It might be of interest to lawyers and to defendants in radar violation situations to look to the manner in which the "Speed Meter Ahead" sign was posted and to compare its posting with the standards in the Ohio Manual. The standards of the Manual relate to legibility, height, lateral position, letter size, et cetera, under various conditions. The sign required for Expressways and Interstate highways measures 48 inches by 60 inches and has 8-inch letters. For other road types smaller signs with either 4- or 6-inch letters are required.

As late as the summer of 1966 the Ohio State Patrol was using the substandard sign on the Ohio Turnpike. The Manual also provides that the "sign shall be erected temporarily whenever . . . any law enforcement officer uses a radar device for the determination of the speed of a motor vehicle. . . ." ²⁹ Prior to 1963 many law enforcement agencies erected permanent signs in places where they regularly operated their radar units. The intent of the Manual is that the signs be posted only when the radar is actually in use. As a result most of the municipalities have removed their permanent signs and erect temporary signs each time they use radar.

Courts in other jurisdictions have since the early days of the automobile recognized the importance of strict compliance with the law in regard to sign erection. The Iowa Supreme Court³⁰ reversed a speeding conviction for failure of the town of Decatur to display an arrow pointing in the direction towards which the speed was to be reduced. The Court stated at page 451:

It may be that the defendant was in no wise misled by the failure of the officers of plaintiff to cause an arrow to be placed upon the sign in question, but the law must be given general application. The placing of an arrow upon signs displayed at highways entering cities and towns, and at points therein, where a change is required in the speed of motor vehicles, is as much a part of the legislative requirement as that same shall have certain words of sufficient size to be easily readable inscribed thereon. . . . Local authorities have no discretion in the matter, and cannot say with what part of the statute they will comply or what ignore.

²⁸ 6 Ohio Jur. 2d 333. See also *State v. Grillot*, 2 OhioApp.2d 81, 206 N.E.2d 420 (1964), where the Court of Appeals of Miami County reversed a conviction of the defendant for making a cross-over at a point where signs were erected forbidding such action where it was shown that the defendant was in a position of violation before he could effectively read the command of the sign.

²⁹ *Op. cit. supra* note 27, at 33.

³⁰ *Town of Decatur v. Gould*, 185 Iowa 203, 170 N.W. 449 (1919), approved and affirmed in *Town of Randolph v. Gee*, 199 Iowa 181, 201 N.W. 567 (1925); *State v. Noyes*, 180 A. 893 (Vt. 1935).

Four years later the same court upheld the decision and stated that the burden of showing that a city had complied with the law as to sign posting in a criminal case is on the state, and it is not to be presumed that public officials have done their duty as prescribed by statute.³¹

In a recent Pennsylvania case³² the court held the state's failure to prove the existence of signs on the road indicating that radar was in use as required by law precluded a conviction based on radar evidence. It was reversible error for the lower court to take judicial notice of the existence of official warning signs erected on the highway in question.

Failure to comply with the Uniform Traffic Control Devices Manual when using radar at night led to the acquittal of an alleged speeding violation in *State v. Wibeit*.³³ The court found from the evidence that the highway markers and control signs were not illuminated: The "Speed Meter Ahead" sign was not illuminated or reflectorized; and there was not enough proof to sustain evidence that the forty-five (45) mile per hour speed control sign was reflectorized. It was held that a speeding offense alleged to have occurred at night was not established in view of Section 4511.091, R.C., which requires that the sign be legible to the operators of approaching vehicles. Further, the requirements of the Uniform Traffic Control Devices Manual are that signs which are to convey their messages during hours of darkness shall be reflectorized or illuminated.

Other Defenses Raised to Radar

In Pennsylvania a radar speeding conviction was reversed for want of competent evidence of the fact that the radar apparatus was of a type approved by the Secretary of Revenue as required by statute.³⁴

A defense sometimes presented is that the use of the radar speed-meter to catch speeding violators constitutes a "speed trap" and, thus, is an entrapment. No case can be found to support this contention. A case coming from the State of Washington held that the use of radar did not constitute a "speed trap" since in using the radar no factor of lapsed time of a vehicle while traveling through a measured section of highway was involved.³⁵ Another case held that the only type of "speed trap" prohibited by California statute is one combining four characteristics: (1) a particular section of highway; (2) measured as to distance; (3) with boundaries marked, designated or otherwise determined; and (4)

³¹ *State v. Clark*, 196 Iowa 1134, 196 N.W. 82 (1923).

³² *Commonwealth v. Brose*, 412 Pa. 276, 194 A.2d 322 (1963).

³³ 9 Ohio Misc. 158 (Mun. Ct. 1967).

³⁴ *Commonwealth v. Perdock*, 411 Pa. 301, 192 A.2d 221 (1963).

³⁵ *State v. Ryan*, 48 Wash.2d 304, 293 P.2d 399 (1956).

the speed of the vehicle calculated by computing the time it takes the vehicle to travel a known distance.³⁶

The issue of the constitutionality of radar speedmeter evidence was raised in *Dooley v. Commonwealth*.³⁷ Here it was held that a statute which provides that the speed of motor vehicles may be checked by the use of radio micro-waves or other electrical devices, and that the result of such checks shall be accepted as prima facie evidence of the speed of such motor vehicles in any court or legal proceeding where such speed is at issue, does not contravene the Due Process Clause of the 14th Amendment to the United States Constitution. The court reasoned that the usual test of constitutionality of statutes which make proof of a certain fact prima facie or presumptive evidence of another fact is whether there is a natural and rational evidentiary relation between the facts proven and the facts presumed, and where such evidentiary relation exists and the presumption is found to be both reasonable and rebuttable, such statutes are not in contradiction of the Due Process Clause of the 14th Amendment of the United States Constitution.

A defense often raised is that the wrong car was apprehended. A Pennsylvania case³⁸ held that a police officer's testimony that he knew the exact spot where the beam first picked up objects and that he observed the defendant's vehicle approach that spot and enter the zone at which time the radar showed a speeding violation was held to be sufficient to overcome the contention of the defendant that since his car was one of five in a line spaced 200 to 300 feet apart the officer could not be certain which vehicle caused the radar unit to register the violation. But other cases have held that the fast pace at which the recording often takes place coupled with the short length of time a vehicle is being read within the "zone of influence" is "might be" testimony or a guess, and should receive no consideration by the trier of fact.³⁹ Tests have shown that on a 30-foot wide roadway during a flow of about 500 vehicles per hour, 80 to 90 per cent of the vehicles could be separately measured. But positive identification of all individual speeds becomes impossible at flows in excess of 1,000 vehicles per hour on multi-lane roads.⁴⁰

Another situation when the wrong car might be clocked arises because the beam sent out may cover both portions of the highway. Since the unit measures in both directions, a vehicle going in the opposite direction might affect the results on the recording graph of the meter by registering the faster speed against the apprehended slower car.⁴¹

³⁶ *In re Beamer*, 133 Cal.App.2d 63, 283 P.2d 356 (1955).

³⁷ 198 Va. 32, 92 S.E.2d 348 (1956).

³⁸ *Commonwealth v. Bartley*, 411 Pa. 286, 191 A.2d 673 (1963).

³⁹ 11 Am. Jur. Proof of Facts (Supp. 1966, at 34).

⁴⁰ *Id.* at 25.

⁴¹ *Id.* at 35.

There are internal factors that can affect the accuracy of radar equipment. Errors can arise in the transmitting frequency and in the frequency meter, *i.e.*, the indicator circuit. An error can be created by the vehicle and transmitter not being in line. The Federal Communications Commission requires that the frequency and power input to the final stage of the meter be checked at least every six months.⁴² There appears to be no reported case on the question of whether readings obtained from a radar unit that was not checked as required by law would be admissible in evidence. There is an opinion by the Ohio Attorney General on the question of whether the readings obtained from radar units used in an area other than where licensed, which is in violation of regulations issued by the Federal Communications Commission, may be properly admitted in evidence. The opinion holds they may be admitted since the Federal Communications Act is to protect the public from interference with the national communications system and not to protect alleged violators of traffic laws.⁴³

Ohio Cases Concerning Radar

In *City of East Cleveland v. Ferrell*⁴⁴ the court followed *State v. Dantonio*⁴⁵ by holding that evidence of speedometer readings should be received in evidence upon a showing that the apparatus was properly set up and tested by the police officers using it, without any need for the independent testimony of electrical engineers as to the meter's general nature and trustworthiness. An appeal from the decision was taken to the Supreme Court and the opinion of the Court of Appeals was affirmed.⁴⁶ There is dictum in the opinion by the Supreme Court to the effect that procedure under Section 2935.03 of the Revised Code which authorizes a police officer to make an arrest without a warrant of a person *found* violating a law of the state, is perhaps distinguished from the usual method of apprehending violators by use of radar operation. By this method the officer in the police car ahead, who apprehends the driver, relies only on information radioed to him by the officer in the radar car. This problem was cured by amendment of Section 4511.091 in 1963. The statute now specifically allows the officer in the car ahead to arrest on the basis of a radio message provided such radio message was dispatched immediately after the speed of the motor vehicle was recorded and the arresting officer was furnished a description of the motor vehicle for proper identification and was furnished the recorded speed.

⁴² *Id.* at 26.

⁴³ Opinion 349, Ops. Att'y Gen. 393 (Ohio 1963) at 396.

⁴⁴ 107 OhioApp. 256, 145 N.E.2d 134 (1957).

⁴⁵ *Supra* note 7.

⁴⁶ 168 Ohio St. 298, 154 N.E.2d 630 (1958).

Another case came from the Court of Appeals of Franklin County.⁴⁷ This case was decided on grounds other than questions involving radar. The court did comment adversely on the testimony of a highway patrolman in the lower court. The officer made vague and conflicting statements in establishing the location of the required sign which the defendant claimed he could not locate. It was noted by the Court of Appeals that this same officer had been reluctant to discuss any of the steps involved in the operation of the radar unit or what parts were subject to failure. The officer testified, "Well, it's quite a complex thing. I am not a technician." The defendant and three witnesses in the car with him all testified in the lower court that the defendant's speed was between 50 and 60 miles per hour. The lower court apparently completely rejected the testimony by the defendant and his three witnesses on the theory that the use of radar is so highly accurate that other evidence questioning it lacks probative value. The Court of Appeals reversed the lower court on the weight of the evidence since there was only a single witness, *i.e.*, the highway patrolman, to testify as to any alleged law violation; this evidence was confined to the alleged speed and was presented in a far from satisfactory manner.

A recent Ohio⁴⁸ case presented the question: "Does Section 4549.13, Revised Code, requiring a motor vehicle used by a police officer while on duty for the exclusive or main purpose of enforcing the motor vehicle or traffic laws of the state to be marked in some distinctive manner or color apply to vehicles used by police officers engaged in enforcing municipal ordinances?" One of the vehicles used in the radar detection of the defendant's car was not so marked. Reversing the Court of Appeals, the Supreme Court held that municipal police cars, used in the enforcement of municipal ordinances regulating speed, were required to be marked in a distinctive manner. The court reasoned that the intent of the legislature in enacting the provisions in question was to provide uniformity in traffic control and regulation in an effort to make driving safer in all political subdivisions within the state. The legislature also intended to put a curb upon the speed traps which were often operated by "peace officers" of the municipalities and townships.

Conclusion

If used correctly, "Doppler effect" radar can be an accurate way to record the speed of vehicles. But courts should not close their eyes to the fact that there are things that can affect the radar's accuracy. Police in using radar should be held to correct procedures both as to ascertaining accuracy each time the unit is used and in complying with the law

⁴⁷ State v. Wall, 115 OhioApp. 323, 20 OhioOp.2d 408 (1962).

⁴⁸ City of Dayton v. Adams, 9 Ohio St. 2d 89 (1967), reversing Court of Appeals of Montgomery County at 3 OhioApp.2d 126, 209 N.E.2d 640 (1965).

regarding its use. A violation of the traffic law is a criminal offense and an alleged offender should have the right to first ask if the police who arrest him have themselves obeyed the law.

There are too few cases, especially in Ohio, on the law applied to speedometer evidence. There must be hundreds of cases in Ohio alone every day concerning radar. The reason that these are not reported cases is evident: it is simpler and cheaper to pay the fifteen dollars or so and forget it. But this very fact breeds negligence if not open disregard for the law by the police. At least half or more of the reported cases are defendant's verdicts.

There needs to be a concentrated attack in Ohio on the flagrant lack, in so many cases, of reasonable notice of the use of radar as required in law. A clean, legible sign that conforms to the manual as to size, position, and erection serves to remind motorists to check their speed and to remind them that the law is being enforced.