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## EVIDENCE OF SPEED — HIGHWAY RADAR

SALLY CAMPBELL

The problem of the highway speeder is almost as old as the automobile itself. With this problem came two others—one, the detection of the speeding motorist, and two, the use of the means of detection as evidence in convicting the offender. Through the years many devices have been invented to determine the speed of an automobile. Some of these have succeeded in the courtroom and are still used; others have been determined inadmissible in evidence. Some of the means most commonly used at the present time met with difficulty at first and in some instances are still not enough in themselves to gain a conviction.

One of the earliest cases was *Commonwealth v. Buxton*<sup>1</sup> in which a device known as a "Photo-Speed Recorder" was admitted in evidence and the offending driver was convicted. The question reserved for the court in that case was the competency of the "Photo-Speed Recorder." Its operation consisted of taking two pictures from behind the automobile suspected of speeding, one picture taken a second later than the other. The second picture would be smaller than the first because the car would be moving away from the photographer. By measuring the difference in size the distance the vehicle traveled during the interval was determined by the photographic rule "that the distance of any distant object from the lens of the camera is as many times greater than the distance of the photograph from the lens as the length of any line of the real object is greater than its length on the photograph. This is a simple proportion."<sup>2</sup> Modernly, of course, this seems like a roundabout way of determining the speed of a moving vehicle. But, as will be seen, the view of the court in asking for an accurate means of determining speed on the highways is still prevalent. The court, in 1910, said: "Indeed it would seem desirable to have some machine whose action being dependent upon the uniform working of the laws of nature would record the speed of a moving object."<sup>3</sup> But, unlike some modern jurists, the same court had this to say about the means of introducing the machine in evidence: "Nor is the fact that the experi-

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<sup>1</sup> 205 Mass. 49, 91 N.E. 128 (1910).

<sup>2</sup> *Id.* at 129.

<sup>3</sup> *Ibid.*

menter was not an expert fatal to the introduction of the machine."<sup>4</sup> Today one of the major problems in the introduction of the new radar speedometer is obtaining an expert to testify to its accuracy.

Since the time of the now obsolete "Photo-Speed Recorder" voluminous cases have been decided regarding the use of the speedometer in the detection of the highway speeder. One of the earliest cases in this field was a Washington case, *Spokane v. Knight*.<sup>5</sup> The question before the court was whether there was sufficient evidence to show the defendant had been speeding. The arresting officer testified he took the defendant's speed by a motorcycle on which he had a speedometer which was tested three times a week. The defendant testified that he had a speedometer which showed he was going less than the speed limit. The court left it to the jury to decide whether the arresting officer's speedometer was out of order. The jury found for the state and the conviction was sustained on appeal. An even earlier case came from Rhode Island. In *State v. Buchanan*<sup>6</sup> the defendant was convicted of speeding. Here the defendant was trying to show his speedometer was accurate, while no mention was made of the accuracy of the police speedometer. The defendant tried to show through testimony of an expert witness how many police departments throughout the country used the same make of speedometer as the defendant had on his automobile. The court held that such testimony did not show the accuracy of the speedometer in general or of the particular speedometer belonging to the defendant.

Pennsylvania has had a great many cases on the introduction of the reading of the police speedometer in evidence.<sup>7</sup> In *Commonwealth v. Parish*<sup>8</sup> the question of the accuracy of the arresting officer's speedometer seemed to be solved by allowing a certificate to be put in evidence stating his speedometer had been tested and found accurate

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<sup>4</sup> *Ibid.* But see *State v. Buchanan*, 32 R.I. 490, 79 Atl. 1114 (1911); *People v. Offermann*, 204 Misc. 769, 125 N.Y.S.2d 179 (1953).

<sup>5</sup> 96 Wash. 403, 165 Pac. 105 (1917).

<sup>6</sup> Note 4 *supra*.

<sup>7</sup> *E.g.*, *Commonwealth v. Klick*, 164 Pa. Super. 449, 65 A.2d 440 (1949) (use of certificate for proving speeding in residential districts); *Commonwealth v. Thompson*, 4 Ches. Co. Rep. 134 (Pa., 1949) (the accuracy of the speedometer of the car of the timing officer may also be established by the testimony of the proprietor and operator of the official testing station); *Commonwealth v. Adams*, 23 Leh. Co. L.J. 381 (Pa. Comm. Pl. 1950) (proof of test of speedometer's accuracy can be made by officer whose speedometer was tested); *Commonwealth v. Cole*, 61 D.&C. 548 (Pa. Quar. Sess. 1948) (no conviction where the accused was timed by an officer whose speedometer had been tested for accuracy within thirty days, speeding in a residential section); *Commonwealth v. Feyka*, 62 D.&C. 353 (Pa. Quar. Sess. 1948) (no evidence of testing within thirty days). Also see Annotation, 21 A.L.R.2d 1200 (1952).

<sup>8</sup> 138 Pa. Super. 593, 10 A.2d 896 (1940).

within thirty days before the arrest. A statute made such certificate prima facie proof that the speedometer had been tested and that it registered accurately.

The Prather speed device is another machine used in some states. This device consists of a timer box carried in a police cruiser. There is a second box called a road switch box placed on the side of the road. A third unit is placed 366 feet and nine inches beyond the first box so a car travelling at twenty-five miles per hour would take ten seconds to reach the second box. A rubber hose across the highway starts the timer when the front wheels hit the hose. It is stopped when the front wheels hit the hose of the second box and the speed of the vehicle can be determined by reference to a chart. The court held in *Carrier v. Commonwealth*<sup>9</sup> that the reading by the officers was admissible since it was established by proof that the device *when used* to test the defendant's speed was mechanically sufficient.

Today the clocking with the police speedometer and such machines as the Prather speed device are being partially replaced in some states by the electronic speedmeter. "Radar" on the highways works as follows:

The radar box consists of two antennas, one a sending or transmitting antenna, and one a receiving antenna. The receiving antenna is connected to an electric speedmeter and to a graph machine which graph machine makes a written record of each car passing within the scope of the radar equipment. The operating area of the equipment is several hundred feet, depending upon the height of the equipment and the angle on which it is placed along the road. When the power supply is connected, the machine is ready for testing and operation. . . .

Actual operation of the radar equipment consists of sending a wave or ray of radio energy down the roadway on the sending or transmitting antenna which wave is reflected off an oncoming car back to the receiver antenna. . . . The sending wave is sent out on one frequency, the deflected or received wave comes back on a different and higher frequency which is translated into miles per hour by the electric speedmeter which measures the difference in the frequencies of the transmitted wave and the received wave. A written recording is made at the same time on a graph machine. The radar operator then identifies and describes the oncoming vehicle and informs the intercepting officers by radio communication of any speeding violations.<sup>10</sup>

Radar received a setback in *People v. Offerman*.<sup>11</sup> In that case the question before the court was the admissibility in evidence of the read-

<sup>9</sup> 242 S.W.2d 633 (Ky., Ct. of Appeals 1951).

<sup>10</sup> *State v. Dantonio*, 105 A.2d 918, 920 (N.J., 1954).

<sup>11</sup> 204 Misc. 769, 125 N.Y.S.2d 179 (1953).

ing of the radar device purporting to record the speed of the defendant's automobile. The state relied entirely on the reading of the speedometer. The trial court made three errors in basing its conviction on such reading.

First, the trial court erred in admitting hearsay testimony regarding the testing of the radar device by the two police officers. The radar car operator testified that the dial reading agreed with the speedometer reading of the pick-up car as reported by the other arresting officer. The court termed this hearsay because each officer relied on what the other said when he testified that the speedometer and the radar dial agreed, since neither knew that they both agreed by their own knowledge. However, the court indicated that this obstacle could be eliminated if records had been kept and thus fall into the business records exception to the hearsay rule.

Second, it was an abuse of the trial court's discretion to allow a police officer having no experience with radar to testify as to his opinion as to the accuracy of the device. The trial court made its third error on the same subject of the accuracy of the radar equipment. The trial judge commented on his own pre-trial experiment made in his own car. This was held inadmissible because it was an unauthorized view, based on hearsay and his private knowledge was not proper for judicial notice.

The last two grounds for reversal mentioned above cannot be questioned. But, as to the hearsay point a different view has been taken in *State v. Dantonio*.<sup>12</sup> In relation to this point the testimony of the officers in relation to the pre-arrest tests was held to be admissible. The view taken was that each officer testified to independent facts, (1) the speed of the patrol car and (2) the reading of the graph; and the court held that the radio communication between the two officers was merely incidental. The requirements of expert testimony were also satisfied. The expert who testified had a Bachelor's Degree and a Doctor's Degree in engineering and he stated that the radar equipment was accurate within two miles per hour either way. He also stated that any defects in the equipment at the time of the arrest would resolve in favor of the motorist.

On the judicial notice point that was raised in *People v. Offermann*,<sup>13</sup> the holding in that case was given added force in *People v. Beck*.<sup>14</sup> In the latter case it was held to be error to take judicial notice of the

<sup>12</sup> 105 A.2d 918 (N.J., 1954). Accord, *People v. Katz*, 129 N.Y.S.2d 8 (Ct. of Spec. Sess. 1954); *People v. Sarver*, 205 Misc. 523, 129 N.Y.S.2d 9 (1954).

<sup>13</sup> Note 4 *supra*.

<sup>14</sup> 205 Misc. 757, 130 N.Y.S.2d 354 (1954).

operation and accuracy of radar devices to establish the speed of the defendant's automobile. It was stated that this was not the proper subject of judicial notice at this time since it was not yet the general knowledge of the country nor a practical application of scientific facts generally known or which ought to be known.

In Delaware the radar reading alone is sufficient to give a conviction if the jury finds that at the time of the arrest the equipment was properly functioning, properly operated, in fact an accurate recorder of speed and the accuracy had been tested within a reasonable time of its use.<sup>15</sup>

In Washington there is as yet no judicial determination as to the admissibility of the radar reading. Washington would, of course, have the same problems as the other states have had regarding hearsay, expert testimony and judicial notice. The Attorney General, however, thinks that the only question would be under RCW 46.48.120.<sup>16</sup> As to this point it is his opinion that the legislature's purpose in passing the statute was to eliminate the element of human error. As to the Electromatic Radar Speed Meter used in Washington he had this to say:

[In this device] . . . the calculation of speed is not based upon the lapsed time required to traverse a measured course. Lapsed time is an element in the operation of the instrument, but it is the time required for the return of the radio signal which is the factor rather than the time required for the vehicle to cover a given distance. The continuous change of the vehicle's position is automatically converted to a reading on the calibrated dial in terms of miles per hour. The speed reading on the instrument is instantaneous and continuous. There is no mathematical formula by which the officer or anyone else calculates the speed. There is here no possibility of human error, particularly where the reading graph is used. This device is clearly outside the scope of the statutory definition.<sup>17</sup>

Even with all the newness and problems connected with it, it is submitted that highway radar is here to stay, in Washington as elsewhere.

<sup>15</sup> State v. Moffitt, 100 A.2d 778 (Del., 1953); noted in 15 OHIO ST. 223.

<sup>16</sup> "No evidence as to the speed of any vehicle . . . shall be admitted in evidence in any court at a subsequent trial of such person in case such evidence relates to or is based upon the maintenance or use of a speed trap. A "speed trap," within the meaning of this section, is a particular section of or distance on any public highway, the length of which has been measured off or otherwise designated or determined, and the limits of which are within the vision of any officer or officers who calculate the speed of a vehicle passing through such speed trap by using the lapsed time during which such vehicle travels between the entrance of such speed trap: *Provided*, that evidence shall be admissible . . . if the same [speed] is determined . . . by a mechanical, electrical, or other device . . . within an error of not to exceed 5 percent. . . ."

<sup>17</sup> AGO 53-55 No. 167 (1953).