

32.2° was not very much less than 92.4°. The question was put in such a way as to lead the witness and other medical gentlemen in Court to infer that Mr. Curran was not aware that 32.2° was a centigrade reading, and that he wished to impress the Court and Jury with the great numerical difference between 32.2° and 92.4°. Dr. Cameron at once replied that Zenker's temperatures were centigrade, not Fahrenheit. Mr. Curran took the book, and after examining it asked what would be the Fahrenheit equivalent of these temperatures. The witness replied that 95° F. corresponds to 35° C., but that he could not tell the exact equivalent of Zenker's temperatures without making a little calculation; that at any rate 32.2° was not lower than the lowest case of recovery just cited (viz., 90.2°). He offered to make the calculation, but neither Mr. Curran nor the Court deemed it necessary. Had Dr. Howard and Mr. Curran been aware that Zenker's cases of 32.2° and 30.6° were centigrade readings, not Fahrenheit, and had they known the F. equivalents of these temperatures, as they ought to have done, they should have been in a position to correct Dr. Cameron in the event of error, and continue the cross-examination. Medical men are not supposed to carry always in their memories a comparative table of C. and F. temperatures, and moreover a witness box is not the easiest place in the world for arithmetical calculations, especially without the aid of pencil and paper. The fact that Zenker's temperatures were C. and not F. seemed to dawn upon Dr. Howard and Mr. Curran as a new revelation, and so filled them with surprise that the cross-examination was at once closed, and no more questions asked.

By thus criticising the evidence of Drs. Vallée, Gardner and Cameron, Dr. Howard endeavors to divert attention from the very strong objections raised by these witnesses against his own thermometric observations. The facts are as follows:—Dr. Howard examined the prisoner on Aug. 26th, and observed an axillary temp. of 93.8°; five days afterwards he observed an axillary temp. of 92.4°—collapse temperatures unaccompanied by marked symptoms of vital depression. Three weeks afterward Dr. Robillard examined the prisoner, and on six separate occasions (17th, 19th, 20th, 21st, 22nd, 23rd Sept.) found the axillary temperature invariably normal. In the face of Dr. Robillard's evidence, were Dr. Howard's observations correct? In a medico-legal case of such importance when the issues of life and death are at stake, it behooves the medical expert to be most accurate

in his examinations, and exclude carefully all possible sources of error. This, as Dr. Cameron pointed out, Dr. Howard failed to do, his observations being open to the following fallacies:

1. When Dr. Howard examined the prisoner, he found that "perspiration was pouring from every pore of his body, cold and clammy." The thermometer then registered 93.8°. Such profuse perspiration was of itself sufficient to vitiate an *axillary* observation, and render it useless for diagnostic purposes, unless corroborated by a *rectal* observation.

2. Clinical thermometers are sometimes very inaccurate, especially towards the bottom of the scale, as the slightest variation in the size of the fine capillary tube causes error. Personally we have seen a clinical thermometer possessing a Kew certificate, in which there was a certified error of between 2° and 3° at 90°. No record of temperature can be accepted as trustworthy, unless an accurate certified thermometer has been employed. Phenomenally high or low temperatures still more require the most positive proof, not only that the observation has been carefully made, but also that the thermometer employed was accurate and reliable. In Hayvern's case a certified thermometer should have been used, and when such exceptional temperatures were recorded the accuracy of the observation should have been verified by the use of one or more other certified instruments.

3. Assuming these low temperatures to have been correct, they were only *axillary* temperatures after all, and were of little value, unless confirmed or corrected by the observation of the *rectal* temperature. In clinical thermometry, the *axilla* gives the temperature of the *surface* of the body, while the *rectum* gives that of the *internal viscera*. The axillary and rectal temperature curves usually run parallel, but sometimes they do not. In cholera, for example, the axillary temperature may be 90° or under, while the rectal temperature is normal or even higher than normal. A low axillary temperature might merely denote coolness of the general surface from profuse perspiration, a feeble languid state of the circulation, or a condition of general depression. Dr. Howard's observations of low *axillary* temperature in Hayvern, if confirmed or corrected by *rectal* observations would have been valuable; uncorrected or unconfirmed they were utterly worthless.