'DRUNK-IN-CHARGE' : SOME MEDICO-LEGAL ASPECTS

C. K. EDELSTEIN, M.B., B.CH. (RAND), *District Surgeon, Wynberg, Cape*

The motoring laws make it an offence for any person to drive a vehicle on a public road while under the influence of liquor or a narcotic drug. Arising out of this, one may ask: 'When is a person under the influence of liquor?'

It has been held and accepted in our Courts that a person is under the influence of liquor when the skill and judgment normally required in the manipulation of a motor-car is diminished or impaired as a direct result of the consumption of alcohol. This definition is a far cry from the old concept of the 'drunk-in-charge' motorist who presents a typical music-hall picture and who, in fact, is not commonly seen to-day. There is no doubt that the manipulation of the modern high-speed juggernaut along our streets and highways, beset with road signs, traffic lights, circles—not to mention the multitude of similarly powered vehicles—is at the best of times a task of some magnitude, requiring in addition to physical properties, such as sound vision, hearing, touch, sense of position, etc., higher attributes such as concentration, caution, muscular coordination and judgment. In other words, any factor which interferes with any one of these requirements will impair the ability of the driver to manipulate his vehicle with the necessary skill, so that he becomes a danger to himself and to others.

It seems to be generally agreed that driving performance begins to be impaired at a blood-alcohol level that is surprisingly low. Drew *et al.*[1] found that steering errors, particularly swings to the right, increase as soon as there is a measurable quantity of alcohol in the blood, and that there is an increasing tendency to make either too little or too much movement in negotiating a corner. The largest dose of alcohol given in Drew's experiments was 3 pints of beer or 5 fl. oz. of whisky, which raised the blood alcohol to 80 mg. per 100 c.c. (·08%)—less than that consumed by the vast majority of offenders seen at police stations. He also found that short tests were unreliable, and that reasonably long-lasting tests seemed to be necessary, unless the impairment was a gross one.

Cohen *et al.*[2] assessed the effects of alcohol on groups of bus-drivers working for the transport department of the Manchester Corporation. They found not only that the men's trustworthiness was impaired even after a small quantity of alcohol (less than 0·5 mg. per c.c.) but that their actual performance deteriorated, they were involved in greater hazards, and they displayed a false confidence in their driving abilities.

This 'sub-intoxicated' state is increasingly recognized today and, although the response by different people to the same concentration of alcohol varies widely, it is becoming appreciated that, at a certain concentration of alcohol in the tissues, signs of intoxication will become evident in anyone, irrespective of his degree of 'tolerance'.

Alcohol is the responsible factor in a large percentage of the motor-vehicle accidents and incidents attributed to 'negligent driving' which never come to the Courts as cases of 'drunken driving', for the reason that the effects of alcohol on human behaviour and performance are not sufficiently appreciated by the public or the police. Only persons who display the 'obvious' signs of intoxication, such as the unsteady posture, the thick speech, the smell of liquor, the blood-shot eyes, and the aberrations of behaviour, are placed under arrest; lesser degrees of intoxication may not be easily discerned and an obviously guilty person may go scot-free at a stage when he is actually 'incapable' of driving his car with appropriate skill.

The Courts attach a great deal of weight to the evidence given by the non-medical witnesses. It is they, and only they, who can testify (*a*) as to the driver of the vehicle, (*b*) the manner of his driving, and (*c*) the signs observed in him at the time of the 'incident' or immediately afterwards—perhaps long before the medical examiner has had a chance to observe him.

The final opinion on whether an accused person was capable of driving a car at the time of the 'incident' is left to the Court to decide: medical opinion can only testify to the condition of the accused at the time of the examination. Unfortunately the importance of the medical evidence has, in some respects, been over-emphasized—to such an extent that, more often than not, the issue of a case turns upon it; and should it be contrary to the police opinion it is probable that no proceedings will be taken. The

Courts are, of course, not bound to accept the medical evidence, and cases have occurred where, for example, an accused has sobered up rapidly after his detention and a conviction has been obtained despite the medical evidence being in his favour. That the police are scrupulously fair in their dealings with 'drunken drivers' has been observed over a period of years and the opinion of an experienced charge-office sergeant is one that deserves the greatest possible respect.

CLINICAL ASPECTS

Almost invariably the accused person is taken to the district surgeon for medical examination. This examination, and the evidence given subsequently in Court by the district surgeon, has always been considered to be of the greatest importance and has been the target of many an onslaught on the part of the legal profession. In an effort by the defence to establish a case the medical witness is often bullied and badgered, his tests are closely examined, his findings are criticized, and hours are spent in the witness-box answering questions and comparing his opinions with those expressed by others—not only in the text-books and literature, but also in the Courts.

Perhaps sufficient emphasis has not been laid on the individual nature, from a clinical point of view, of every case. Moreover, it is often not appreciated that:

(*a*) a considerable period of time may elapse before an accused person is examined;
(*b*) the examiner may lack the necessary experience required in carrying out the various 'tests' and interpreting their significance; or the tests applied by the examiner may only be adequate for the cases of gross impairment, and may not demonstrate the lesser degrees; and
(*c*) the employment of different tests favoured by individual doctors must of necessity lead to conflicting opinions on their interpretation.

Speed limits were legalized years ago, and what is now sorely needed is an alcohol limit—a sort of 'Plimsoll' safety-line of alcohol in the human body.

It is not the purpose of this article to discuss the physiological aspects of intoxication, but a brief description of the medical examination is included. This should always be carried out in a large, well-lit room—preferably not in the charge office—and it is usual for the examiner to enter his findings on form 457 (Health) which serves as an aid to his memory when he enters the witness-box. If he neglects to enter a description under any one of the 17 items on this form, he may be questioned on his omission, so that it is imperative for the examiner to complete the form and to make additional notes enlarging on the particular faculty that he has tested and described.

The following is a useful guide in examining an accused person:

Gait. The doctor should if possible follow the accused into the room so that he can observe his gait and the way he turns, goes through the doorway, or walks up steps.

General appearances. Once inside the examining room, objective signs may be noted such as colouring, stance, odour of breath, and state of clothing.

History. It is important to ascertain from the accused (apart from his name, address, occupation, etc.) whether he understands the reason for his detention and the nature and purpose of the proposed examination, and whether he complains of illness or injury—past or present. He should be asked if he is willing to give an account of himself and his movements during the preceding few hours, and the circumstances leading up to his apprehension. In this way an opportunity is gained of assessing the speech of the accused, his general behaviour, his orientation, and his memory. This is one of the best tests of mental alertness and accurate cerebration. If these are normal his account of his movements should be clear, logical and consequential as regards time and place. There should be no 'gaps'.

Examination. This should be comprehensive and unhurried, and directed towards eliciting signs not only of intoxication but also of any pathological state that may reasonably be confused with alcoholism, e.g. head injuries; neurological conditions (such as epilepsy, cerebral vascular disease, Parkinson's disease—to mention a few); psychological disorders such as acute anxiety or hysteria; metabolic disorders such as diabetic pre-coma, hypoglycaemia, cholaemia and uraemia; effects of drugs, acting either *per se* on the individual or synergistically with alcohol; exposure to carbon monoxide; and, finally, high fever.

Herein lies the greatest value of an adequate clinical examination —not so much the definite diagnosis of intoxication, but the elimination (or confirmation) of the presence of non-alcoholic factors which may have been responsible for the alleged condition of the accused at the time of the 'incident'—as described by the non-medical witnesses.

The examination should commence with the taking of the temperature and pulse of the accused, followed by an inspection of his eyes, the size of the pupils and their reactions, and an inspection of his ears by means of an auriscope. The tongue is inspected, the presence or absence of teeth or dentures is noted, and the smell of the breath is confirmed. It should be remembered that certain drinks 'do not touch the breath', so that, while the presence of an alcoholic breath indicates consumption of alcohol, its absence does not necessarily indicate the reverse.

The accused should then strip down to the waist and his heart, lungs and abdomen should be examined, and the blood pressure recorded. His legs should be examined for any diseases or deformities that may interfere with his gait, and the knee reflexes (and if necessary those of the ankles) should be tested. If necessary, detailed examination of the entire central nervous system should be carried out. Finally, the urine should be collected and tested for albumen and sugar, and the accused should be weighed.

From the foregoing it will usually be possible to formulate some opinion on his powers of coordination and the manner in which his muscles react to the communications from the brain. The examiner should observe the manner in which the accused buttons or unbuttons his clothes, ties his shoe-laces, takes a cigarette and lights it, picks up small objects from the floor, and so on. Coordination should be further tested by asking the accused to close his eyes and place the tip of a finger on his nose, on the tip of another finger, or to various other named parts of the body. While his eyes are closed, Romberg's test may be performed. The value of Romberg's sign is questionable in these cases, because normal people may sway slightly when their eyes are closed and their heels placed together and, on the other hand, many obviously intoxicated persons are found to concentrate to such an extent as to not sway at all.

Other tests for coordination include the following: The accused can be asked to write down his name, address and occupation. (This, the writing test, could be done right at the beginning of the examination.) A fair assessment can be made only by comparing his writing with a sample written on another occasion. However, it is surprising what gross defects are often seen. Syllables and letters are often repeated or transposed, excessive up-and-down strokes are made and, often, the writing is hopelessly out of line. A simple arithmetical test can be given (depending on education) and the manner in which the calculation is performed may reveal obvious and gross incoordination. Another useful test is the 'Porteous maze test', in which the subject is given a pen or pencil and asked to draw in the path from a point outside to a point in the centre of a simple maze of the kind often found in children's comics and magazines.

The examiner should select whichever tests seem to him most suitable in the particular case. It is futile to subject an illiterate person to a writing or arithmetical test; on the other hand, the educated or intelligent person, who is just the man capable of handling himself in a difficult situation, is the one who should be subjected to tests of wider range and greater discrimination.

THE DIAGNOSIS

The examiner, having critically reviewed the clinical picture as a whole, may now be in a position to express his opinion of the accused's condition at the time of the examination. His opinion should be based solely on his clinical examination, and he should make a note accordingly on form 475 (Health) for future reference. Provided the examination is carried out shortly after the alleged 'incident', and that it is done thoroughly and discriminatingly, a decision should usually be possible. The examiner may be asked to express his opinion of the condition of the accused at the time of the 'incident'. He may be able to do this with reasonable accuracy by comparing his condition at the end of the examination with his condition at the beginning of the examination; or, if possible, by seeing the accused again 1 - 2 hours later. He may also be assisted by ascertaining the time of drinking—the time of the first and the time of the last drinks. Perhaps it would be considered unfair to question the accused directly on these points; however, there is no valid reason why an inference should not be

made from his conversation or his voluntary statements on the matter. The examiner should also remember that a person may be 'shocked into sobriety' in a manner of minutes. Although he is obviously intoxicated, the large quantity of adrenaline secreted as a result of the emergency that has arisen may temporarily counteract the effects of the alcohol, without influencing the amount present in the tissues or blood. This factor is one that diminishes the value of the clinical examination.

If the examiner should consider that an accused person is intoxicated he should note the degree of intoxication. It has always been my custom to classify my 'cases' into one of four groups, viz: (1) mildly inebriated, (2) markedly inebriated, (3) drunk, or (4) very drunk.

Table I shows the frequency of the clinical signs (as noted on Form 475) and the category into which each of 120 cases that I have examined was placed. Those cases were all encountered in actual medico-legal practice and are unselected, though, for obvious reasons, only cases in which the result of blood-alcohol determination are available have been included. In each case the clinical classification was made before the result of the blood-alcohol determination was known.

In 2 cases, low blood-alcohol levels 'confirmed' the absence of clinical intoxication. In one case no clinical opinion could be given. This was a case in which more than 2 hours had elapsed between an accident in which the accused was involved and the time of the examination. The accused was not prosecuted for drunken driving although his blood alcohol level was 150 mg. per 100 c.c. The details of this case were subsequently discussed with the non-medical witnesses, who were of opinion that the accused was definitely under the influence of alcohol at the time of the accident.

From Table I it becomes very apparent that no one sign in itself is pathognomonic of alcoholic intoxication. It also becomes apparent that signs such as Romberg's and disorientation of time and place are only of value in cases of actual drunkenness; also that 'disorders of dress' and 'vomiting' are of such rare occurrence as to be of no value in the case that presents the greatest difficulties, viz. the slightly inebriated person. This is the person who usually 'gets away with it'—the one who is often not 'certified' by the examiner; the man, in whom the only abnormal findings may be the diminution of critical self-awareness and powers of discrimination and judgment; the man, who, in fact, may be a greater danger on the road than the obviously intoxicated person. It is for such a person that the prolonged and more complicated tests are necessary.

Eye signs. In my opinion the combination of bloodshot eyes with dilated pupils (occasionally contracted) reacting poorly to light is very valuable evidence of intoxication—no matter what the stage. It is true that this combination is belittled by the defence—sometimes, indeed, little is made of it by the medical examiner. How often, though, is such a combination found in persons not under the influence of alcohol? I made a specific search for this combination in over 600 different and unselected normal persons, and did not find it in a single person.

BLOOD-ALCOHOL DETERMINATION

Table II shows the results of the blood-alcohol determination in each of the series of 120 cases. From consideration of this table, the following striking facts emerge:

1. That there is a correlation between the blood-alcohol level and the degree of intoxication present; the higher the blood alcohol the greater the degree of impairment. The table, however, also shows that there is a fairly marked variation in tolerance and in the ability of the subject to control the more obvious aberrations of his condition. Thus, of 13 persons with blood-alcohol levels of 0·21%, 3 showed only slight inebriation, 8 were markedly inebriated, 1 was drunk and 1 was very drunk.

2. That, although a person may be intoxicated at a blood-alcohol level below 0·15%, no person with a blood-alcohol level at or above this figure was found to be sober.

There is no doubt that the blood-alcohol level should be regarded as the official 'Plimsoll line' previously mentioned—not of the degree of impairment of the faculties, but simply of impairment.

A great deal has been written about 'critical' levels of blood alcohol—above which an individual is regarded as being 'under the influence'. These figures vary widely, ranging from 0·05% in Norway to 0·10% in France and Germany. No such official figure has yet been laid down in British law. In America it has long been maintained that indisputable proof of 'under the influence' exists when the alcohol in the blood reaches 0·15%[3, 4] and both the National Safety Council and the American Medical Association have recommended that this should be recognized as the ceiling value;[5] the figure of 0·15% has in fact been officially adopted by most of the states of the USA.

In South Africa, no blood-alcohol standard has been adopted, and considerable differences of opinion are encountered amongst doctors and amongst lawyers. It is felt that the time has come when lines of demarcation between levels of blood alcohol can confidently be recommended. In my opinion the following standards would be

TABLE II. BLOOD-ALCOHOL LEVELS BY GROUPS (NO. OF CASES)

Blood alcohol (gs.%)	*Slight inebriation*	*Marked inebriation*	*Drunk*	*Very drunk*	*Not inebriated*	*No opinion*	*Total*
·08	–	–	–	–	1	–	1
·11	1	1*	–	–	–	–	2
·12	–	1*	–	–	1	–	2
·13	–	1*	1	–	–	–	2
·15	3	–	2	–	–	1	6
·16	1	3	–	–	–	–	4
·17	4	2	2	–	–	–	8
·18	1	9	3	–	–	–	13
·19	1	4	–	–	–	–	5
·20	5	7	1	–	–	–	13
·21	3	8	1	1	–	–	13
·22	–	5	3	–	–	–	8
·23	1	1	3	–	–	–	5
·24	1	1	5	–	–	–	7
·25	–	2	5	–	–	–	7
·26	–	1	3	1	–	–	5
·27	–	3	–	1	–	–	4
·28	1	1	–	–	–	–	2
·29	1	1	1	1	–	–	4
·30	1	2	2	2	–	–	7
·31	–	–	2	–	–	–	2
Total	24	53	34	6	2	1	120

*Plus drugs

TABLE I. COMMONLY ACCEPTED SIGNS OF INTOXICATION: CASES OF EACH TYPE OF DISORDER, BY GROUPS

Clinical Group	*No. of Cases*	*Speech*	*Smell*	*Pupils*	*Conjunctivae*	*Dress*	*Vomiting*	*Gait*	*Positive Romberg*	*Muscular incoordination*	*Behaviour*	*Disorientation (Time)*	*Disorientation (Place)*	*Memory*
Slight inebriation ..	24	20	18	21	22	0	0	15	0	22	11	4	2	14
Marked inebriation ..	53	50	52	49	49	7	1	53	11	53	41	24	12	53
Drunk	34	34	34	33	33	10	1	34	24	34	34	32	23	34
Very drunk	6	6	6	6	6	1	1	6	5	6	6	6	6	6
Not intoxicated ..	2	1	2	0	1	0	0	0	0	0	0	0	0	1
No opinion possible ..	1	0	1	1	1	0	0	0	0	0	1	0	0	0
Total	120	111	113	110	112	18	3	108	40	115	93	66	43	108

fair to all—would result in the guilty being punished and the innocent being freed:

(*a*) 0 – 0·10% (inclusive)—not under the influence of alcohol.

(*b*) 0·11 – 0·14% (inclusive)—possibly under the influence of alcohol.

(*c*) 0·15% and above—definitely under the influence of alcohol.

Our laws require that before a person can be convicted of drunken driving the Court must be satisfied that he is guilty of that crime beyond any reasonable doubt. Although there is no doubt whatever that blood tests are fair and objective, yet it may go against our sense of fair play and justice to accept a chemical test by itself as the last authoritative word concerning a driver's ability to manipulate his vehicle with the necessary 'skill and judgment'. There is, indeed, no danger of its being so accepted alone, because no case of this nature can proceed without the testimony of the non-medical witness or witnesses. Therefore, in terms of what has been postulated in this article, guilt beyond a reasonable doubt would be constituted by a blood-alcohol level of 0·15% or more, confirmed by the testimony of the lay witnesses *or* the medical examiner. Where the blood-alcohol level lies in the 'possible' level (0·11 – 0·14%) then positive confirmation will have to come from the lay witnesses *and* the medical examiner. In a person of average weight, the concentration of alcohol in the blood decreases by approximately 0·015% per hour. Taking this into account, no great difficulty will be experienced in calculating what a person's blood alcohol probably was at a particular time before the medical examination.

SUMMARY

1. The skill required for modern-day driving may be impaired by an amount of alcohol that is surprisingly small.

2. The 'sub-intoxicated' individual, who is frequently the most dangerous driver on the road, often escapes the consequences of his actions because it is not realized that his inability to drive properly is reached long before the stage where he is obviously intoxicated.

3. Methods of clinical examination are explained, and the value of the examination, as well as its deficiencies, are stressed.

4. The need for some 'Plimsoll line' as a safety test of alcohol in the human body is imperative.

5. Determination of the blood-alcohol level of an accused person is a fair, objective and accurate test. Blood-alcohol levels of 120 cases are shown and correlated with their clinical findings and classifications.

6. It is proposed that a blood-alcohol level of 0·15% or above, plus the presumption of intoxication, confirmed by either the lay or the medical witnesses, should constitute *prima facie* evidence of drunken driving; but that with levels between 0·11% and 0·14% (inclusive) the intoxication of the accused should be confirmed by evidence of his physical state from both medical and non-medical witnesses before he can be found guilty beyond any reasonable doubt.

I am indebted to Prof. R. Turner, Senior Government Pathologist, Union Health Department, for his helpful criticism and advise at all times. I also wish to express my thanks to the Secretary for Health for permission to publish.

REFERENCES

1. Drew, C. C., Colguhour, W. P., and Long, H. A. (1958): Brit. Med. J., **2**, 993.
2. Cohen, J., Dearnaley, E. J. and Hansel, C. E. M. (1958): *Ibid.*, **1**, 1438.
3. Queries and Minor Notes (1949): J. Amer. Med. Assoc., **140**, 132.
4. *Idem* (1950): *Ibid.*, **142**, 523.
5. Heise, H. A. (1944): *Ibid.*, **124**, 1290.