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INTOXICATION TESTS—A THIRD YEAR REPORT

T. U. MARRON AND R. W. MORRISSEY

Motorists arrested for intoxication during 1939 and 1940 were classified according to the blood analyses done in this laboratory (Marron, 1941). Examination of the results indicated that the average man apprehended for driving while in an intoxicated condition had a concentration of 226 mg. of alcohol per 100 cc. of blood. It was calculated that he drank 11 to 14 ounces of whiskey, 11 to 14 bottles of 3.2% beer, or the equivalent. Ninety-two percent of those submitting to blood tests were intoxicated according to the standards of the National Safety Council. Seventy-two percent had consumed a minimum of three-fourths to one and one-fourth pints of whiskey or its equivalent in alcoholic beverages.

Since these findings were rather surprising, the records of blood alcohol determinations performed by us in 1941 were tabulated for comparison with the previous report. Table I shows the comparative figures.

Alcohol determinations were made by Harger titrations on distillates obtained from the blood mixed with saturated picric acid. A calculator and modified distillation apparatus for this purpose are described in another paper (Marron and Banwarth, 1942). All blood samples were drawn and preserved in accordance with the precautions found necessary (Marron, 1941a). Blood alcohol values for the average man in each class were calculated as in the previous paper (Marron, 1941).

TABLE I

Distribution of Drivers into Classes by Blood Alcohol Levels

| Classes of drivers (blood alcohol mg. %) | | Number of persons tested | | Percent of total cases | | Blood alcohol of average man in class (mg. %) | |
|---|----------|--------------------------------|------|------------------------------|-------|--|------|
| 1939-40 | 1941 | 1939-40 | 1941 | 1939-40 | 1941 | 1939-40 | 1941 |
| 0-387 | 0-491 | 402 | 326 | 100.0 | 100.0 | 226 | 232 |
| 0-149 | 0-149 | 34 | 25 | 8.4 | 7.7 | 86 | 118 |
| 150-199 | 150-199 | 81 | 165 | 20.2 | 20.2 | 177 | 179 |
| 200-299 | 200-299 | 232 | 197 | 57.7 | 60.4 | 242 | 242 |
| 300-387 | 300-399 | 55 | 36 | 13.7 | 11.0 | 321 | 329 |
| | over 400 | 0 | 3 | 0.0 | 0.9 | — | 442 |

Comparison of the drivers of the year 1941 with the drivers

tested in the preceding two years shows that they had almost identical blood alcohol concentrations. Percentages of drivers at various intoxication levels recur with precision rarely duplicated in any correlation study. Since the values cover the full range physiologically tolerable, and the samples were drawn from a relatively wide geographic area, it does not seem possible that any sort of selectivity could be responsible for the remarkable reproducibility of values in two different periods.

Consequently, these data may be made useful in traffic surveys and law enactment and enforcement.

Of those submitting to tests each year, fewer than 10% had not been drinking at all or only moderately. Twenty percent of the 90% driving in a dangerous state of intoxication had definitely passed the lower arbitrary level of 150 mg. % with an average blood alcohol concentration of about 180 mg. %. More than half (about 60%) of these drivers whose questionable ability to handle a motor vehicle was investigated had an average of 242 mg. % of alcohol per 100 cc. of blood. The remainder were in a seriously incapacitating state of intoxication.

Indications are quite definite that under our system of voluntary submission to blood tests the drinking and driving habits in the state remain constant. Similar surveys made in an area where intoxication tests have been made mandatory evidence would be proof of the effectiveness of such legislation.

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