Correspondence

Letters to the Editor should not exceed 500 words.

Microbiology's Relevance to Clinical Medicine

SIR,—Recent correspondence (21 January, p. 170; 28 January, p. 237; and 11 February, p. 365) has shown that there is danger that if things continue on their present course the infectious diseases will cease to be a subject for the practice of specialist medicine. It has been suggested that we need to have men well trained in general medicine and in microbiology. This is clearly a sound proposal and there has been some comment on the variety of clinical experience that might be useful.

I think the second half of the proposal will not succeed until we have overcome a curious presupposition that I believe exists in this country—namely, that, while a physician may be good at clinical work as well as being trained in a laboratory discipline such as physiology, biochemistry, genetics, or experimental pathology, training in microbiology is somehow incompatible with clinical medicine. In earlier days the physicians at isolation hospitals were often in fact competent diagnostic bacteriologists, or so I am told. Such men would be hard to find today, and yet I believe that any medical registrar could find a great deal of interest in a year or two of work in a diagnostic or research labora-

tory, where he could handle bacteria and viruses and measure antibodies and see the reactions of organisms to antibiotics. Such a period might well be combined with a clinical research project or some other means of maintaining contact with patients.

In the United States of America men with this type of experience may be found and I believe they will be needed here for years to come. Infections and infectious diseases are not beaten; they can intrude seriously into new areas, reducing the therapeutic value of recent advances in applied physiology such as intensive care and renal dialysis units. Of course a good hospital bacteriologist is to be found on the wards and discusses cases and other problems with his clinical colleagues, but that is to attempt to build a bridge from one side only; to do it properly clinicians should be encouraged to make themselves familiar with microbes at the laboratory bench. Then they can come out and meet the bacteriologist in the middle of their common ground.—I am, etc.,

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Driving and Social Drinking

SIR,—Your readers will know that there is at present a Bill¹ before Parliament which, if passed, will define a new offence—namely, that of attempting to drive a car with a specific proportion of ethanol in the blood, without regard to apparent or actual ability to do so. There are many objections to the Bill in its present form, but, with the large Parliamentary majority enjoyed by the Government and the prevailing favourable climate of public opinion, it is almost certain to become law some time this year. The Bill will initially define the levels which will constitute an offence as 80 mg./100 ml. in blood and 107 mg./100 ml. in urine. In practice social drinking takes place under variable conditions of food consumption, urinary secretion, and rate of ingestion. The amounts of alcoholic beverages given in various published Tables^{2,3} which most nearly represent these levels are 5 pints of beer and 5 single whiskies of the current English standard of 1/6 of a gill (5/6 of an ounce or 25 ml.).

We have made an attempt to define the range of levels that this amount of beverage might be expected to produce when consumed in a London public house at lunch-time by analysing by alcohol dehydrogenase⁴ 20 sets of blood and urine specimens taken from male adults. The plan was to consume the

beverage in about 30 minutes, and collect blood and urine specimens 30 minutes later. From some of the subjects second urine specimens were also collected after a further 30 minutes. However, this design was not rigidly insisted upon, and the range of behaviour that did develop was itself noteworthy. The times given in the Table are from the median drinking-time to the collection of the specimen.

Blood and Urine Ethanol Levels in mg./100 ml. in Response to Social Drinking at Lunch-time of 2½ Pints of Beer or 5 Single Whiskies in About Half an Hour

Subject	Drink	Time	Blood	Urine	Ratio U/B	Second Urine	Ratio U1/U2	Weight in Kg.
1	Beer	32	114	37	0.31	—	—	76
2	"	40	78	28	0.36	70	0.40	76
3	Whisky	45	45	80	1.8	70	1.10	72
4	Beer	45	17	30	1.78	20	1.50	85
5	"	72	66	67	1.02	—	—	87
6	"	105	87	102	1.18	69	1.47	76
7	"	121	48	45	0.94	—	—	76
8	"	125	52	65	0.8	61	1.06	76
Mean of 20 results:			56	52	0.93	53	1.0	
S.D.:			17	15	0.38	20	0.26	

It will be seen that variability was considerable. The mean level produced was well below that predicted by Table in the B.M.A. Report (90 and 120 mg. per 100 ml.

for blood and urine on average), but two subjects did produce indictable levels and one of them exceeded 90 mg. per 100 ml. However, none of the urine levels was culpable, and in fact on average they were not above those obtained from blood. The variability did not obviously relate to time nor to bodyweight.

Two conclusions emerge. One is that urine levels are, under social conditions, much more favourable to the drinker than the proposed Bill envisages. The other, that this amount of alcoholic refreshment, while ordinarily legally negligible, may be expected to produce indictable levels in about 10% of subjects. A third point is the marked personal variation. In the one subject tested five times the values were 36, 52, 61, 67, and 87 mg. per 100 ml., and in another, who was tested three times, 48, 78, and 114 mg. per 100 ml. These results span nearly the whole range of the data.

There is now a reasonable amount of evidence that social drinking does not in fact produce very high levels. Dr. Martin Wright, employing the Kitagawa Wright breath analysis apparatus,⁵ has found levels equivalent to 10 to 50 mg. per 100 ml. of blood in five subjects with identical consumption and very similar conditions.⁶ At a recent dinner of the Australian Bar Association levels around midnight were found to be mainly between 30 and 40 mg. per 100 ml., and none were above 60 mg. per 100 ml.⁷ Blood levels here in successful prosecutions at the present time are upwards of 150 mg. per 100 ml. The clear implication is that ordinary social consumption of alcohol, particularly if combined with adequate food intake, will not usually produce levels sufficiently high to result in a successful legal action, but that the margin between immunity and indictment will shortly become much closer than hitherto. It should also be stressed that measurable impairment of ability is readily demonstrated at the levels achieved in these experiments.⁸ They should be regarded as absolute maxima if the subject intends to be in charge of a motor vehicle, and it is confidently expected, Sir, that most of your readers would limit their consumption to considerably less than this if they anticipated the need to drive thereafter.—I am, etc.,

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- ⁷ Birrell, J., *Medical Tribune*, London, 1967, 2, No. 2, 1.
- ⁸ Drew, G. C., Colquhoun, W. P., and Long, H. A., *Effect of Small Doses of Alcohol on a Skill Resembling Driving*, *Memor. med. Res. Coun. (Lond.)*, 1959, No. 38. London.