

Physical and Mental Disabilities of 1,190 Ordinary Motorists*

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It is becoming increasingly apparent that a significant number of road-traffic accidents are directly attributable to the ill-health of motorists. The medical conditions that are likely to reduce a motorist's driving skill and increase his risk of accident have been reviewed by a subcommittee of the British Medical Association (1954), the American Medical Association (1959), Norman (1954, 1960), McFarland and Moore (1957), Imrie (1962), and at symposia held in Montreal (1956) and New York (1956). LeCount and Rukstinat (1929), Norman (1954), Somerville (1962), and Hoffmann (1963) have all described cases in which road accidents have been caused by the sudden death of motorists. Much has been written about the effect on motorists of particular disabilities and diseases, but few attempts have been made to assess the extent to which the medically unfit drive, and no attempt has been made to assess the mental and physical illnesses of ordinary motorists in this country. A survey has therefore been made to determine the extent to which motorists living in a rural area suffer from mental and physical diseases.

The medical disabilities of relatively young men who were either employed or seeking employment as professional drivers have been described by Kerr (1952-3), Norman (1954), and Webb (1955). The disabilities found by a civilian medical board during the years 1941-4 in young professional male drivers have been described by Webb. Kerr (1952-3) examined 2,000 young men for employment as professional drivers. He then analysed their medical records and concluded that 10% of all drivers are medically unfit and should not drive. He found that 37% of the men were not fit for employment as drivers, and that 24.1% had defective vision. Norman (1954) reported that 23% of 6,370 applicants for employment as drivers of public service vehicles were rejected by the London Transport Executive for medical reasons: 12.5% were rejected because of defective vision. The Association of Optical Practitioners (1965) tested 7,984 drivers for visual acuity. It found that 1.12% of the drivers failed to comply with the Ministry of Transport's minimum standards, and estimated that there are about 150,000 drivers in Great Britain whose visual acuity is less than the minimum statutory requirements.

A primary difficulty in assessing whether or not a motorist is medically fit to drive is the almost complete absence of any standard norm of fitness for drivers. At present any person over the age of 17 will be issued with a provisional driving licence provided that (a) he states that he can read a registration number plate at a distance of 25 yards (23 metres)—this is equivalent to a visual acuity of 6/15 with one eye or 6/12 using both eyes together; (b) he does not suffer from epilepsy or sudden attacks of disabling giddiness; and (c) he does not suffer from any serious mental or physical disease. Whether he complies with these standards is usually decided by the applicant himself. When a licensing authority considers that applicants do not fulfil these standards it can ask the medical officer of health for his assessment. Elliott (1963) pointed out that the number of people referred in this way is very small. He found that during 1961 only 70 out of 259,999 applicants for driving licences were referred for a medical assessment.

Drivers of public service vehicles have to be over the age of 21. A periodic medical examination is mandatory for these drivers, though the examining doctors are given very little indication of the standard required by the Traffic Commis-

sioners. It is probable that this lack of an established norm produces a highly varied assessment of the at-risk and borderline cases, with a strong bias where possible in the drivers' favour. There are even different standards for visual acuity in different parts of the country. Drivers employed by the London Transport Executive are required to have a visual acuity of 6/9 and 6/12, whereas the Traffic Commissioners in other areas will accept visual acuities of 6/12 and 6/36, which also happens to be the standard required for London taxi-cab drivers.

Method

A particular zone of a general-practitioner catchment area was selected for the survey. The names and addresses of all motorists living in the area were determined with the aid of local police constables. Each constable was supplied with the electoral roll for his area, and asked to list those people whom he knew either did or did not drive a motor vehicle. The same information was obtained in a similar way for those aged 17 to 21, the local comprehensive school's class register being used for the relevant years. In this way the identity of all the motorists in a small and closely knit community was quickly obtained. The local police were found to have an almost exact knowledge of the driving habits of the people, and in cases of doubt the relevant information was obtained from close friends or relatives. This method proved to be much better than the direct questioning of patients, which had been tried originally and discarded when it became apparent that some patients thought that they were being discouraged from driving.

Of all the drivers in the area, 76.6% (1,190) were found to be patients of one group practice. The medical records of these drivers were examined to determine the extent to which they suffered from known physical and mental diseases and to assess their fitness to drive a motor vehicle.

The virtual absence of any generally accepted norm of fitness for motorists requires an assessor to establish his own standard of medical fitness. The establishment of this standard was simplified in two ways. Firstly, by attempting to assess only the motorists' fitness to drive a public service vehicle and by not attempting to assess their fitness to drive other vehicles. This enabled the standard to be correlated with the British Medical Association's (1954) recommendation and with the requirements of the London Transport Executive, which have been described by Norman (1954, 1960). The second simplification was to classify all those motorists whose fitness was in doubt as fit to drive.

Drivers who had epilepsy, blackouts, previous coronary thrombosis, recently treated cancers, aortic incompetence, certain grades of hypertension, and anaemia, or who had lost a limb or an eye were automatically regarded as unfit to drive. Drivers with other disabilities were assessed on the severity of their particular disability. No driver was considered unfit to drive for psychiatric reasons unless his illness had lasted for at least three months.

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Results

A total of 4,088 people over the age of 17 live in the area (2,025 men and 2,063 women)—59.8% of the men and 16.4% of the women drive a motor vehicle. Of all residents, 38% drive. Of the drivers, 76.6% (1,190) are practice patients. Table I shows the relative proportions of male and female drivers in the area. Of the practice drivers, 9.2% (109) were found

TABLE I.—Relative Proportions of Male and Female Drivers

	In Area		In Practice		In Other Practices	
	No.	%	No.	%	No.	%
Total No. of drivers ..	1,552		1,190		362	
No. of male drivers ..	1,212	78.1	927	77.9	285	78.7
„ „ female drivers ..	340	21.9	263	22.1	77	21.3

TABLE II.—Relation of Physical and Mental Diseases to the Sex of the Drivers

	Male		Female		Total	
	No.	%	No.	%	No.	%
No. of drivers in practice ..	927		263		1,190	
„ „ „ with significant disabilities ..	89	9.6	20	7.6	109	9.2
„ „ „ „ physical disabilities ..	69	7.4	8	3.0	77	6.5
„ „ „ „ mental disabilities ..	20	2.2	12	4.6	32	2.7

TABLE III.—Psychiatric Illnesses Among the Drivers

	Male	Female	Total
Anxiety states	10	5	15
Depression	7	4	11
Manic-depressive	0	1	1
Paranoia	2	0	2
Schizophrenia	0	1	1
Recurrent delirium tremens	1	1	2
Total	20	12	32

Only those patients who have been receiving treatment for at least three months are recorded.

TABLE IV.—Physical Illnesses Among the Drivers

	Age	Male	Female	Total
Epilepsy	—	7	1	8
Blackouts	—	3	—	3
Previous coronary thrombosis	—	6	—	6
Congenital aortic stenosis with left ventricular failure	32	1	—	1
Aortic incompetence with congestive cardiac failure	75	1	—	1
Severe hypertension (B.P. 215/110)	—	7	2	9
Congenital hereditary spherocytosis with amputated leg and chronic ulcers of remaining foot	50	1	—	1
Chronic anaemia, Hb below 60%	—	5	1	6
Chronic lymphocytic leukaemia with gout and ankylosed wrist	72	1	—	1
Hodgkin's disease	37	1	—	1
Recently treated neoplasms	—	4	2	6
Artificial limbs { Upper	—	2	—	2
Lower	45	1	—	1
Polio-myelitis of leg	58	—	1	1
Congenital torticollis	45	—	1	1
Cervical spondylosis	59	1	—	1
Ankylosing spondylitis	—	2	—	2
Grossly impaired respiratory function	—	7	—	7
Diabetes { Insulin-resistant	62	1	—	1
Peripheral neuropathy	57	1	—	1
Disseminated sclerosis	44	1	—	1
Fractured skull with deterioration of intellect	56	1	—	1
Previous stroke: hemiparesis	66	1	—	1
Previous cerebral abscess with persistent neurological signs	50	1	—	1
Cerebral atrophy with deterioration of intellect	55	1	—	1
Cerebral arteriosclerosis with bilateral pyramidal and extrapyramidal disease and deterioration of intellect	65	1	—	1
Syringomyelia with neuropathic elbow and spastic limbs	45	1	—	1
Single eye	—	5	—	5
Bilateral macular degeneration with central scotoma	66	1*	—	1
Conical cornea with diplopia	56	1†	—	1
Bilateral cataract with diplopia, ghost image, and poor night vision	67	1	—	1
High myopia	57	1‡	—	1
Cavernous optic atrophy with central scotoma	29	1	—	1
Total	—	69	8	77

Patients with more than one disability have been recorded only once.
* Visual acuity: 6/24 6/60. † Visual acuity: 6/60 6/6. ‡ Visual acuity: 6/36 6/36.

to have mental or physical diseases which would make them unsuitable to drive a public service vehicle. The relation of these diseases to the drivers in the practice is shown in Table II. The type of mental illness recorded is shown in Table III and the physical illnesses in Table IV. It will be seen that 6.5% of the drivers had physical illnesses and 2.7% had mental illnesses: 7.4% of the male drivers and 3.0% of the female drivers had a significant physical illness, and 2.2% of the male drivers and 4.6% of the female drivers had a significant mental illness.

Hypertension

Nine patients had severe hypertension. Only those whose records showed that a B.P. level of at least 215/110 had been recorded on three or more occasions were included. This provided a basal level which was higher than the upper limit (210/105) accepted by the London Transport Executive for its drivers. Clinical details of these patients are given in Table V, which also shows that some of the drivers had important associated disabilities such as hemiparesis, blackouts, depression, anaemia, and Menière's syndrome as well as retinal haemorrhages, uraemia, angina, and bundle-branch block.

TABLE V.—Motorists with Severe Hypertension

Age	Sex	B.P. Highest	B.P. Latest	Retinopathy	Blood Urea (mg./100 ml.)	Hypotensive Drugs	Associated Conditions
53	M.	255/155	190/110	Haemorrhages	45	Guanethidine	Diplopia, blackouts. Left ventricular failure
45	M.	260/145	170/100	„	45	Methyldopa	Left hemiplegia. Depression.
47	M.	250/150	210/140	„	100	„	Duodenal ulcer. Left ventricular failure. Anaemia.
43	M.	220/130	170/130	—	38	Guanethidine	Depression. Left bundle-branch block. Vertigo
52	M.	220/125	180/110	—	58	„	Stapedectomy for otosclerosis
60	M.	220/110	200/105	—	—	—	Angina
60	M.	220/130	210/110	—	—	—	Hydronephrosis
39	F.	240/150	180/130	—	49-64	—	Deaf. Myopic.
50	F.	240/115	165/85	—	—	—	Chronic bronchitis. Chronic nephritis. Stapedectomy for otosclerosis. Menière's syndrome

Anaemia

Six patients had been recently treated for anaemia. Only those whose haemoglobin levels had fallen below 60% were included in the series. Patients with a history of sudden severe bleeding were also excluded. Two men had been driving with a haemoglobin level below 40%. Another man with a haemoglobin of 54% had a grossly contracted tuberculous left lung.

Cancer

Six patients had been recently treated for cancer. One octogenarian was driving despite the handicap of an inoperable carcinoma of the lung and pleural effusion. A sexagenarian had a carcinoma of the prostate removed and then developed secondaries in the liver; these were successfully treated by increasing his intake of oestrogens, and he continued to drive his car. A middle-aged woman obtained a provisional driving licence after an operation for carcinoma of the breast. She had a radical mastectomy and bilateral oophorectomy, and was able to pass the driving test despite gross lymphoedema of the left arm. Another woman noticed deterioration of her vision over a period of six months. She had a melanoma of the right eye, which was removed. The two other patients were men aged 59 and 61; both had cancers of the large intestine which were treated surgically.

Coronary Thrombosis

Six men had a history of coronary thrombosis. The oldest was a septuagenarian with an associated bundle-branch block, auricular fibrillation, and left ventricular failure. Two men had a history of more than one infarct; one of these men also had a duodenal ulcer, and had been recently treated for a fairly severe haematemesis. Another driver, aged 64, had a coronary thrombosis when he was 56, and a pituitary adenoma was removed at the age of 53. His postoperative recovery was complicated by the development of a subdural haematoma, which was evacuated but left him with a mild hemiparesis. He was given maintenance doses of thyroid, methyltestosterone, and prednisone, and consequently developed osteoporosis with collapse of the second, third, and fourth lumbar vertebrae. He could walk only with the aid of crutches. On three occasions he was found in a state of coma. He recently died from a spontaneous pneumothorax and associated coronary thrombosis.

C.N.S. Lesions

A 65-year-old man with a considerable deterioration of intellect, and with bilateral pyramidal and extrapyramidal disease, no longer drives overtly, but occasionally drives along quiet country lanes. A 45-year-old farmer has syringomyelia, which was first diagnosed 16 years ago, when he was found to have a spastic paraplegia and a rhythmic nystagmus. Since then his condition has progressively worsened. He had bilateral main succulente, the scars of multiple injuries on both hands, and a neuropathic right elbow joint (Charcot joint). He has recently stopped driving his car, but continues to drive his tractor.

Epilepsy and Blackouts

Eleven drivers suffered from either epilepsy or blackouts. Of the 21 adult epileptics in the practice 8 (38%) were driving a motor vehicle. Seven (54%) of the 13 male epileptics and one (12.5%) of the adult female epileptics were also driving. These percentages are similar to those for all the male and female drivers in the area, and appear to indicate that in this area epilepsy does not seem to prevent people from driving. The figures include one epileptic who continues to drive contrary to medical advice, one who drives without holding a licence, and one who has recently temporarily retired from driving. A fourth epileptic included is now dead. His death was attributed to an accident which did not involve a motor vehicle. The figures are considerably higher than those reported by Phemister (1961) and by Pond and Bidwell (1960). Phemister questioned 130 epileptics, and found that 28 (21.5%) admitted to driving a motor vehicle. Twenty-seven of these were men. The 27 men formed 45% of the male epileptics questioned by him, and the woman 1.4% of the female epileptics. The percentages reported by Pond and Bidwell were even lower. They found that 15% of the 150 epileptics questioned by them admitted to driving a car.

Though the differences in these results can be attributed to chance or to differences in the samples, it is possible that the difference is essentially one of technique. The figures obtained by Pond and Bidwell are based on a survey made by a psychiatric social worker, who visited 218 epileptics, previously unknown to her, from whom she obtained a detailed social and psychiatric history. The figures given by Phemister were obtained by a senior registrar in a hospital outpatient department who questioned those epileptics who attended his clinics, and were presumably previously not entirely unknown to him. The present figures are based on known medical data available to a general practitioner about people whom he knows to be driving cars. It is possible that the closer the observer is to the individual or family unit the more exact his knowledge might be.

Some patients will admit to epilepsy or blackouts to their family doctor and refuse to see a specialist. About a year ago a 56-year-old lorry driver informed me that he had blackouts in the cab of his lorry. He wanted his general practitioner to know about it, but would not allow the matter to be taken any further. Another patient, who was reported by the police to have blackouts, sent a strongly worded solicitor's letter to his doctor when he thought that unwarranted specialist investigation was envisaged.

Age and Sex Distribution

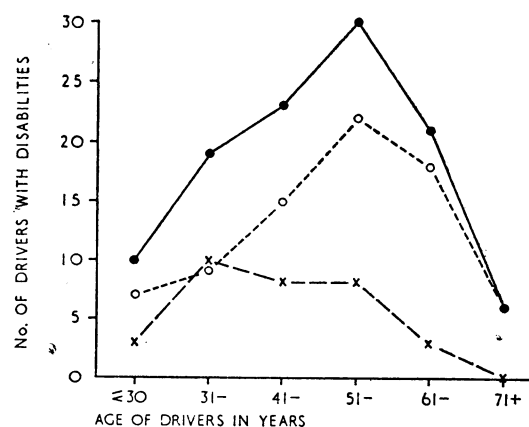
Table VI gives the age and sex distribution of the drivers with mental and physical disabilities. Seventy-nine (74%) of the drivers were over the age of 40, and 29 (26%) were below that age. Of the 29, 20 (18.5% of the total) suffered from either epilepsy (7) or mental illnesses (13). Half of the physically disabled drivers below the age of 40 had either epilepsy or blackouts, and only one driver over the age of 40 had epilepsy. These figures do not reflect the age distribution of the epileptics in the practice, and would seem to suggest that the young epileptic is now more likely to be driving a car than an older man with the same disability.

TABLE VI.—Age and Sex Distribution of Drivers with Mental and Physical Illnesses

Age	Mental Illness			Physical Illness			Total		
	M.	F.	Total	M.	F.	Total	M.	F.	Total
≤30	1	2	3	6	1	7	7	3	10
31-40	5	5	10	8	1	9	13	6	19
41-50	5	3	8	12	3	15	17	6	23
51-60	6	2	8	20	2	22	26	4	30
61-70	3	—	3	17	1	18	20	1	21
71+	—	—	—	6	—	6	6	—	6
Total	20	12	32	69	8	77	89	20	109

All the drivers with a history of previous coronary thrombosis were over the age of 50. All the drivers with severe respiratory disease were, with one exception, over the age of 60, and all the patients with severe hypertension were below that age. Both patients with paranoia were 61.

The majority of the drivers with physical disabilities were in the 41-70 age group, with the highest number in their sixth decade. The drivers with mental illnesses were younger, and with three exceptions (two men with paranoia and a 67-year-old man with a depressive illness), were all below the age of 60. The mentally ill are relatively evenly distributed throughout the 31-60 age group, and their largest single group is in the fourth decade. The difference in age distribution between drivers with physical and mental diseases is shown more clearly in the Chart.



Relative ages of drivers with mental and physical disabilities. ●—● All drivers with disabilities. ○---○ Drivers with physical disabilities only. x---x Drivers with mental illnesses only

Discussion

Of 1,190 ordinary motorists whose ages range over seven decades, 109 (9.2%) were found to have important mental or physical illnesses. It was thought that these illnesses would probably impair their skill as motorists and render them unsuitable for employment as drivers of public service vehicles. Though no attempt was made to assess their fitness to drive private vehicles, it is hoped that a subjective assessment can be made from the data given. The sample is representative of the ordinary motorists in a town/country area, and consists of 76.6% of all the drivers in a rural community in which 4,088 people are old enough to drive.

The total figure of 9.2% correlates closely with the findings of Webb (1955) that 1 in 11 (9.1%) of professional drivers fall below the (presumed) standard of medical fitness for holders of ordinary driving licences, and with the estimate made by Kerr (1952-3) that 10% of all drivers are medically unfit and should not drive. The figures given by Webb and by Kerr were reached after examining the medical records of men below the age of 40, who either were or wished to be employed as professional drivers. The close correlation between the final estimates tends to conceal the fact that the three samples are not similar, and that the three assessments were made with different standards of medical fitness. Though neither Webb nor Kerr defines his standards, the difference is apparent from the number of drivers who were considered unfit because of defective vision. Kerr found that 24.1% had defective vision, whereas only 5.5% of Webb's sample were regarded as unsuitable to drive for this reason. In my own sample 1.0% of the drivers had defective vision, and half of these were included because they were without an eye. This figure is close to the findings of the Association of Optical Practitioners (1965) that 1.12% of drivers have substandard vision. My own figures should probably be higher, but we hold records for visual acuity only of patients with particularly defective vision.

An interesting difference was noted in the age and sex of the drivers. The drivers with physical ailments were usually men, and were either middle-aged or elderly. Drivers with mental illnesses were younger, and included a much larger proportion of women. The epileptics who drive were mainly men below the age of 40. The percentage of epileptics who were driving was similar to the proportion which one would have expected to find driving if they were not suffering from their illness. This relative youth of the epileptics suggests that it is possible that epilepsy is becoming less rigidly accepted by young men as a bar to driving.

It is difficult to assess the number of drivers who should not be driving, and even more difficult sometimes to tell a man that he should not drive. The young hypertensive with retinal haemorrhages and uraemia should probably not drive. But when one knows that he is the only member of the family who can drive, and that they live in an isolated farmhouse, one is reluctant to add to his considerable difficulties by depriving him and his family of their sole means of transport. The elderly man with a history of coronary thrombosis, hemiparesis, collapsed vertebrae, and removal of the pituitary gland should also probably not drive, but one's aim is to maintain him in as near normal a mode of life as possible, and this presumably includes continuing to drive his car. The responsibility for deterring these people from driving lies with the local licensing authority and not with their doctor.

In most instances it is sufficient for the general practitioner or specialist to advise the patient to declare his disability. The instances in which this method is not applicable arise when people drive despite the presence of an acute or terminal illness. It is not rare for the country doctor to see patients drive to the surgery with severe and acute illnesses such as influenza and even pneumonia. These patients should be told that they must not drive until they have recovered. Similarly, young men who drive with their arms and legs encased in plaster casts

should be advised not to drive. The old motorist with a terminal cancer is a more unusual but sadder case. He sometimes knows that he should not be driving, but is unwilling to admit defeat or that his end is near. He refuses to accept the advice of his family and friends not to drive, but is more likely to accept this advice from his doctor. In one recent instance the patient promptly underlined this acceptance by immediately giving his vehicle to a relative.

The number of drivers who declare a disability when renewing their licences is probably very small. The exact number could be determined by an examination of the records held by the local licensing authority, but unfortunately access to this information was not obtainable. An assessment has therefore been made from casual conversations with drivers and their relatives, and on this basis it is thought that probably less than 1% of drivers declare a disability. This very small number is attributable to various reasons. There are a few drivers who deliberately conceal their disability, but this number is small. Some drivers do not know of their disabilities, and therefore are unable to declare them. Other drivers know of their disabilities, but are unaware that their ability to drive might be impaired. This is due in part to the wording of D.L.I., the form which motorists complete when they apply for their licence. This form does not indicate sufficiently clearly which disabilities should be declared. A more detailed and precise questionnaire which asks questions such as, "Have you had a stroke?" or "Are you being treated for blood pressure?" would be better. It would not only help motorists to realize which disabilities might not be compatible with driving, but would also enable licensing authorities to determine more exactly the drivers who are at risk for medical reasons.

A number of disabled people continue to renew their driving licences though they no longer drive. One such person is a man 67 years old. He is a diabetic, and has not driven for over 15 years. He has a previous history of intermittent claudication, arterial thrombosis, and an abdomino-perineal resection for cancer of the rectum. He continues to renew his licence to avoid the need to pass a driving test should he ever require a mechanical wheelchair. Another sexagenarian had a subarachnoid haemorrhage 17 years ago. Since then he has been unable either to ride his motorcycle or to work. His licence remains valid, and he continues as a qualified driver to accompany friends learning to drive cars.

In a rural area some people who have stopped driving cars for medical reasons will continue to drive agricultural tractors. The reasons for this are partly economic and partly due to a lack of knowledge of the particular dangers of tractors. It has been pointed out in a previous paper (Rees, 1965) that people injured in tractor accidents are much more likely to receive fatal or serious injuries than people injured in other types of motor-vehicle accidents. It would therefore seem sensible to advise those farm workers who are not fit to drive cars that they should not drive tractors. This advice has to be quite specific. A patient with syringomyelia who developed a neuropathic elbow joint was advised not to drive. He stopped driving his car but continued to drive his tractor because he had received no precise instruction about tractor driving. Another patient, a young epileptic, was advised by a neurologist to stop driving a car, but was told that he could continue to drive a tractor. Farm workers spend considerably more time driving tractors than driving cars. A farm worker who is an epileptic is therefore much more likely to have a fit driving a tractor than driving a car, and if it is considered unsafe for him to drive a car it is probably even more hazardous for him to drive a tractor.

Summary

A survey was made to assess the known mental and physical disabilities of ordinary motorists resident in a rural area. With the help of the local police the identity of all motorists resident

in the area was determined. It was found that 4,088 people over the age of 17 lived in the area, and that 38% (1,552) drove a motor vehicle. Of these drivers 76.6% (1,190) were patients of one group practice, and the known mental and physical illnesses of these drivers were determined from the practice records.

It was found that 9.2% (109) of the drivers had at least one significant mental or physical illness. The criterion of significance used was whether the illness rendered the motorist unsuitable to drive a public service vehicle. In the case of mental illnesses an additional requirement was that the illness had been present for at least three months.

Of the drivers 6.5% (77) had physical illnesses and 2.7% (32) had mental illnesses; 7.4% (69) of the male drivers and 3.0% (8) of the female drivers had a significant physical illness; and 2.2% (20) of the male drivers and 4.6% (12) of the female drivers had a significant mental illness.

Most of the drivers with physical illnesses were over the age of 50, the largest single grouping being in the sixth decade. The majority of those with mental illnesses were below the age of 50, with the largest single grouping in the fourth decade. Half the physically disabled drivers below the age of 40 had either epilepsy or blackouts, and with one exception all the epileptics were under the age of 40. The percentage of epileptics driving was similar to the proportion one would have expected to find driving if they did not suffer from their illness.

It was found that some severely disabled people continued to renew their driving licences, though they no longer continued to drive. It is probable that less than 1% of all motorists declare disability when applying for a driving licence.

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Diurnal Variations of Platelet Stickiness compared with Effects Produced by Adrenaline

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The first simple method of assessing platelet stickiness was introduced by Wright (1941). Subsequent modification by McDonald and Edgill (1957) showed that this technique could be used to demonstrate a significant difference in platelet stickiness between patients with ischaemic heart disease and control subjects. The technique used in the present study is exactly that of McDonald and Edgill. Before beginning the present investigation reproducibility of results was adequately verified in a series of cases, both by the same investigator and in comparison with other investigators. In a comparison of patients with ischaemic heart disease and control subjects platelet stickiness results showed some scatter, but the mean difference between these two groups was significant at 0.01 level in our experience (Fig. 1).

Fat Loading

The present study was initially undertaken to investigate any correlation of changes of platelet stickiness with those of plasma lipids induced by a 50-g. fat breakfast.

In 1958 McDonald and Edgill studied patients with ischaemic heart disease before and after four to five weeks' subsistence on a fat-free fruit-and-rice diet; reduced platelet

stickiness occurred on this regimen. Mustard and Murphy (1962) found that a diet rich in dairy fat and eggs caused an increase of platelet clumping and diminished platelet survival times. However, there appear to be no reports on serial platelet stickiness changes in acute fat-loading studies.

Altogether 40 such fat loadings have now been carried out primarily in order to assess the effects of various drugs on

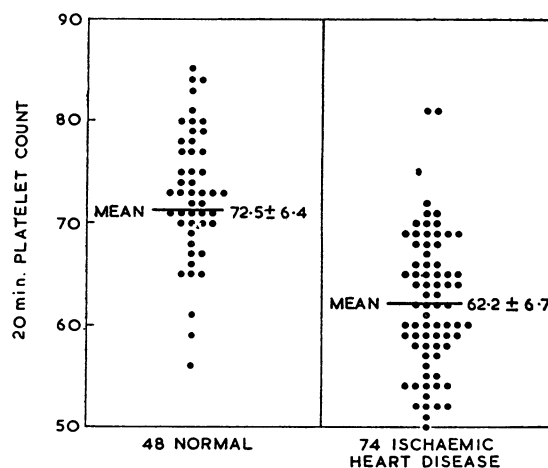


FIG. 1.—Morning platelet stickiness in 122 subjects.

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