medical history and family history which do not permit of easy discovery by the insurance company.

The insurer's position of disadvantage has been recognised by the courts for something like 150 years by fixing the applicant with the duty to disclose all facts material to the risk which he knows or could reasonably be expected to know. This is a higher duty of disclosure than the "ordinary" good faith which applies to other transactions and is called *utmost* good faith. A "material fact" has been judicially defined as a fact which would affect the judgment of a prudent underwriter in deciding on the quality of the risk to be run. The legal remedy for non-disclosure of a material fact is that the aggrieved party (usually the insurance company) is permitted to avoid liability under the contract.

Dr Maclay probably knows all this full well. The point I urge him to consider is that the testing of a fact for its materiality is not a matter for the applicant or his medical adviser, nor indeed even for the insurer (although the latter must be considered a better judge). Whether or not a fact is material as defined is ultimately a matter for the courts alone. Thus Dr Maclay has to be sure that, say, any random High Court judge would agree that a personal history of "outpatient attendances for psychotherapy and for mild drug medication" was not a fact that would "affect the judgment of a prudent underwriter." This particular point, so far as I know, has never been tested and there is no precise legal precedent. With all respect to Dr Maclay he really should not take upon himself the judge's role.

As it happens, I incline to agree with him that the kind of personal history he quotes should not disqualify an applicant from obtaining life assurance on special terms, or even perhaps ordinary terms according to individual circumstances. But as an underwriter I would sooner *know* about such a history and make up my own mind about the quality of the risk. Better by far is it for Dr Maclay to advise his patients to make a full disclosure even of psychiatric histories he regards as trivial and then seek a life office—there are enough of them—which is prepared to take a "sensible" view.

I should not like to leave anyone with the impression that life offices frequently seek solutions in the courts to problems arising from non-disclosure. You can, Sir, count on your thumbs the number of times in the last 15 years that life offices have gone into court to seek to avoid liability following breaches of utmost good faith. What I do say is that an applicant ignores this important principle only at his peril.

Private medical attendants could help their patients, especially those with personal histories of physical ailments, by taking care over the completion of reports requested by life offices. Overworked GPs have no time to write essays, of course, yet a sketchy report grudgingly given can do great disservice to an anxiety-prone patient, whose psyche may be further disturbed by an underwriting decision that could have been more favourable on better evidence.

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Suicide and life insurance

SIR,—The consequences for life insurance of mental illness have been the subject of recent correspondence. A related matter is the approach adopted by life insurance companies to suicide. That suicide precludes payment on a life insurance policy seems to be a widely held belief. The purpose of this letter is to make known some facts bearing on this point

and to propose that the time has come to abolish insurance penalties for suicide.

A booklet published by Stone and Cox¹ summarises the policy conditions of 100 life insurance companies; 52 of them have suicide exclusion clauses, with varying time restrictions. For 26 companies it is one year, for 16 13 months, and for 10 companies two years. The payment to which the excluding companies commit themselves in the event of suicide varies. Twelve companies undertake to refund the premiums paid or the surrender value of the policy, three indicate that payment will be less than the full amount, and one states that all premiums will be forfeited; the remaining 36 simply say that the policy is voided. This presumably does not preclude discretionary part payments. Most companies with exclusion clauses state that suicide within the defined period renders the policy void except for third-party interests. We understand this qualification to mean that policies used as cover for some commercial transaction are not subject to the exclusion clause and are thereby protected.

As part of our inquiry to ascertain the effects of conjugal suicide on 44 surviving spouses^{2,3} we included questions concerning life insurance. Of the 44, 20 were insured, 13 were not, and in 11 cases we could not ascertain whether the life had been insured. Some payment was made in all 20 cases known to have been insured; in six of the 20 (30%) a proportional sum was paid and in one case the widow could not remember whether she had received the full amount or a proportion.

Suicide exclusion clauses are presumably inserted to discourage or prevent a fraud on the insurance company. Does the law not already provide a remedy whereby payment can be refused on proof of such a fraud, making suicide exclusion clauses unnecessary? The 45 companies which do without a suicide clause must resort to such means of protecting other policyholders. The only other explanation for suicide exclusion clauses is that such clauses are an expression of moral disapproval of suicide, surviving from the days when suicide was a crime. It is of interest that five companies also exclude death "at the hands of justice."

Fraud by suicide must be excessively rare in England. A broad provision to avoid the necessity of detecting a rare event may have unfair financial consequences for the families of suicides, and for that reason we believe all life insurance companies should now follow the lead of the large minority and remove suicide exclusion clauses from their policies.

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¹ *Life Assurance Policy Conditions*. London, Stone and Cox, 1976.

² Shepherd, D M, and Barraclough, B M, *British Medical Journal*, 1974, 2, 600.

³ Barraclough, B M, and Shepherd, D M, *British Journal of Psychiatry*, 1976, 129, 109.

Serological test for tuberculosis

SIR,—I would like to comment on the paper "Evaluation of a serological test for tuberculosis" by Dr D A Mitchison and others (28 May, p 1383).

Firstly, I would agree that the results obtained reflect the true titre of agglutinin antibody and cannot be explained on the basis of technical differences between the respective laboratories.

Secondly, the finding that there is no relationship between agglutinin levels, Man-

toux reaction, or BCG vaccination history is consistent with our own experience.

Thirdly, it is undoubtedly true that the agglutination test will not provide a yes-or-no answer in the diagnosis of tuberculosis. For the past 12 months in this laboratory titres have been correlated to culture results and tables showing "probability of culture-positive disease" generated. These have been distributed to laboratories requesting serology as an aid to the interpretation of results. Although disease has been found in patients with all levels of titre, it is apparent that the probability of disease rises with titre. In an analysis of the first serum sample received from each of 8000 patients it is apparent that some significance still attaches to the value of 1/120, though 44% of patients at that level do not have tuberculosis (see table). Analysis

Correlation between mycobacteria isolations and agglutinin titre

Titre	No	No with positive culture	% With positive culture
2400 (2500)	28	28	100
1200 (1250)	27	25	93
600 (500)	119	103	87
300	378	321	85
240 (250)	419	326	78
120 (125)	1980	1116	56
60 (50)	2403	48	2
30 (25)	2207	25	1
<30 (<25)	400	1	0.25
Totals	7961	1993	

has also revealed that women have higher titres than men and that the majority of false-positive results occurred in patients with elevated IgM levels. This information can all help in the interpretation of a result, but eventual assessment of the test must depend on the co-operation of requesting centres in supplying details of culture results and diagnoses. This information is obtained for just over 70% of sera sent to Midhurst, and our analysis figures naturally exclude the other 30% "unknown" quantity.

The study reported by Dr Mitchison and his colleagues refers to an assessment of the test in Hong Kong patients. Any attempt at correlation of these figures with the Midhurst figures obtained from patients in Britain fails to recognise the influence of disease prevalence and ethnic origin on the validity of any serological test. Indeed, the lack of correlation is to be expected; Professor J G Cruickshank, working in Rhodesia, was unable to record titres below 1/120 in any Black Rhodesian worker, while great differences exist in the titres observed in the new immigrant and second-generation immigrant of this country.

It is also of some relevance that our figures refer to culture-positive disease with *Mycobacterium tuberculosis*. It is possible that smear-positive patients are affected with other mycobacterial strains, and this may account for some of the seronegative results. Titres in contact patients are often elevated, and this may well reflect contact with the antigen. Titres in our experience, however, fall rapidly in these patients, and it is unfortunate that the Hong Kong group were not reassessed serologically as well as radiologically. It is disappointing that Hammersmith patients group 1, who more accurately reflect the type of sample received at Midhurst, were not subjected to closer analysis in terms of diagnosis. I am unable to perform this analysis

as we have no clinical data, the samples being examined blind by my laboratory. It is also regrettable that we have no experience with sera from patients with suspected venereal disease, making comparison of control group results difficult.

It is obvious from the many studies now carried out that the prediction value of the test is dependent on the sample under test and, while accepting the findings of this investigation, I feel it is still far too early to abandon our work, since examination of the misleading results may well enable modifications to be made to the test procedure to improve its accuracy.

A C NICHOLLS

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Urinary tract infections

SIR,—Allow me to draw attention to two errors in Professor A W Asscher's recent paper on urinary tract infection (UTI) (21 May, p 1332).

In his paragraph on the treatment of UTI in pregnancy Professor Asscher states that displacement of bile salts from plasma protein by sulphonamides may precipitate or exacerbate kernicterus. Clearly the compound liable to such displacement is unconjugated bilirubin and not bile salts as stated.

In discussing some antibiotics best avoided in the treatment of UTI in the presence of renal failure he states that "tetracycline also prevents urea utilisation by the liver and so produces an even greater rise of serum urea concentration." In fact liver (or any other mammalian tissue) never utilises urea, lacking appropriate enzymic resources for this. The elevation of circulating levels of urea observed during treatment with tetracyclines appears to be due to a diminution in protein synthesis in the tissues. The catabolism of amino-acids results in increased urea production in the liver and negative nitrogen balance. Tetracycline may thus be expected to add to the nitrogen loss encountered in other catabolic conditions, such as glucocorticoid treatment.

BRENDAN M BUCKLEY
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*.*We sent a copy of this letter to Professor Asscher, whose reply is printed below.—ED, BMJ.

SIR,—I thank Dr Buckley for spotting two inaccuracies in my paper on the treatment of urinary tract infections. "Bile salts" should read "bilirubin" and "urea utilisation" is shorthand for "urea nitrogen reutilisation" by the liver.

Tetracycline by virtue of its antianabolic effect may suppress synthesis of amino-acids from ammonia produced in the gut by hydrolysis of urea by colonic bacteria. This inhibition may lead to increased diversion of ammonia to the urea cycle with a consequent rise in the serum urea concentration. The most important causes of the rise in serum urea during or after tetracycline treatment in patients with kidney failure are naturessis and vomiting. Since renal function may be permanently harmed I must reiterate that all tetracyclines with the possible exception of

doxycycline should be avoided in patients with kidney failure.

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When is significant not significant?

SIR,—To question the statistical logic of Sir Richard Doll and Mr Richard Peto (4 June, p 1433) is like unto being a feeble Christian among the lions—annihilation is almost certain. Furthermore, as a non-smoking surgeon I am delighted to see that I seem to have something of a chance of immortality. Nevertheless, I must take issue with them for wanting to have their statistical cake and eat it as well. There is no justification whatever for the statement in their summary (not, incidentally, clearly developed or supported in the text of their paper) that "the few other statistically significant associations between occupation and disease were thought to be due to chance. . . ." In making such a pronouncement they automatically destroy the logic of practical statistical inference, one of the tenets of which is to say that given a certain probability level we will believe that the results have not arisen by chance. To say that although such a probability level has been achieved we can still choose to ignore it (perhaps because it does not suit the argument) is capricious.

Sir Richard and Mr Peto must choose. Either they will accept a higher chance probability (for example, 1 in 10 rather than 1 in 20) as a decision rule—and this is not inappropriate in much biological work—or they must leave the matter open, eschewing "thought" which is unaccompanied by the canons of inference.

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Role of the occupational health adviser

SIR,—The letter from Dr J M Goldman (7 May, p 1221) and subsequent correspondence has encouraged me to reminisce.

In 1951, when still a principal in general practice, I obtained an appointment as part-time medical officer to a local government training centre/industrial rehabilitation unit—now renamed "skill centre." By 1958, when I resigned from the NHS, I thought I had learnt a considerable amount about industrial health and "job selection." How wrong I was! When engaged fully in multiple part-time appointments in a cross-section of commerce and industry ranging from heavy machinery and smelting to food production and senior executives I soon found that careful observation of individual processes must be among the basic criteria required for assessing suitability for specific types of employment.

In my view Dr Goldman's opinion that the patient's family doctor should decide in all cases whether or not he (or she) is fit for employment can only result in occasional unfortunate situations—perhaps even to the extent of permanent unemployability—which could have been avoided with specialised guidance. Would a general practitioner consider himself better qualified than a surgeon

to advise on operative treatment for his patient?

At times I have written, in confidence, to an employee's family doctor or consultant; on rare occasions I have learnt that my letter has been read to the patient. As with Sir Ian Fraser's experience (18 June, p 1599), such responses should be considered only as "occupational hazards" within the medical profession. However deplorable, they are rare, and should not be permitted to detract from the great benefits gained by many through interchange of professional confidences.

Far too often I find little thought given to the community compared with what some people express as "the rights of the individual." Throughout my quarter-century engaged in occupational health I have maintained the view that when assessing the suitability of an employee for a specific job consideration should be applied, in the following descending priority, to: (1) the employee, (2) the safety of workmates around him, (3) his family, and (4) his employer. How can any medical practitioner not employed in industry be expected to give the same detailed guidance to an employee?

FRED J ROBERTSON

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SIR,—I was glad to read Dr R E W Fisher's letter (18 June, p 1599), which puts the record straight in that the employer and the employee are entitled to specialist occupational medical advice from a doctor who is familiar with the patient's work in all its aspects.

The correspondence shows once again the need for better and more comprehensive occupational health services in the UK. If skilled advice is not available to employers many disabled and handicapped persons will be employed in unsuitable work—or not employed at all. Also the person who becomes clinically ill while working is liable to have his employment terminated or fail to be placed in work within his reduced capabilities.

A R BROADBENT

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SOMA

SIR,—In my previous letter (28 May, p 1409) I merely asked a question of Mr Saugman. In his reply (11 June, p 1538) he has declined to answer the question, which he has interpreted as an allegation. I have made no allegation. I simply asked whether it would be impolite to ask Mr Saugman if his company ever paid authors royalties of more than 12½%. Once again he puts his finger on yet another potent reason why the formation of SOMA is opportune: it is precisely because such questions as royalties are not openly discussed that royalties paid by various publishers vary and why it is necessary for authors to pool information so that they may seek the best possible return for their labours.

I J T DAVIES

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*.*This correspondence is now closed.—ED, BMJ.