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DUPLICATE

"SCIENCE" IN THE PRACTICE OF MEDICINE: ITS LIMITATIONS AND DANGERS

AS EXEMPLIFIED BY A STUDY OF THE NATURAL HISTORY OF ACUTE BRONCHIAL ASTHMA IN CHILDREN

WILLIAM ROE

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There are more things in heaven and earth, Hamlet,
Than are dreamt of in your philosophy.

(Hamlet I.v)

Is it not possible that modern humanistic man, excited by the success of the scientific method, and exalted by his liberation from the absurdities of medieval thought, has been carried away into a new period of dogmatic folly only a little less absurd than that which preceded it? Could he be making a gigantic mistake? (ALISTER HARDY, The Spiritual Nature of Man)

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Introduction

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There was a time when physicians of the Western world possessed sufficient humility, courage, and integrity to accept the fact that certain forces which were obviously of vital importance in the maintenance of the health of their patients, being intangible, could not be accurately defined and hence were not amenable to investigation by the scientific method. As a consequence, the practice of medicine was divided into the art and the science, the former being considered no less important than the latter.

The author thanks his colleagues Drs. B. Hartle Boys, H. Kingston, T. Parr, and D. Carroll, under whose care many of the patients in the study were admitted; the house surgeons and nurses who bore the brunt of the immediate responsibility for patient management; the physiotherapists for their valuable contribution; and the general practitioners of the Nelson Province, without whose tolerance toward the heretic in their midst the study would not have been possible. Thanks, also, to the staff of the National Health Statistics Centre for their invaluable assistance.

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"Science," defined in the restricted terms in general use in contemporary medicine namely, the body of knowledge acquired by the application of the scientific method—the experimental testing of hypotheses.

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With the passage of time, however, and especially in the twentieth century, the art has suffered neglect and even denigration, while the status accorded the science has steadily increased until it has now acquired an aura of holiness which bodes ill for its future and for the future of mankind. In certain quarters, especially in academic circles, medicine is actually regarded as a science, with the implication that anything not scientific has no place in medicine. Thus has been created a serious imbalance between these two components.

By starting from a false premise, a superstructure has been created which is, to a not inconsiderable degree, an iatrogenic fantasy. The primary function of medicine has been transformed from a service to patients to a vocation and avocation for medical and paramedical personnel (see later); iatrogenic disease has become a major problem [1-5] and medicine has become big business [6-10]. An urgent need exists to correct this imbalance, to restore the art of medicine to its former status. This is unlikely to occur without appreciation of how the current situation developed. Nor is it likely to occur until we recognise the absurdity and danger of the consequences of this imbalance.

This paper offers an hypothesis to explain the manner in which the situation arose and, by means of a study of a specific disease, illustrates this absurdity and danger.

Man, the Mythmaker

No more than a superficial acquaintance with anthropology, ethnology, or history is required for it to become apparent that the need to indulge in fantasy is deeply ingrained in man. Indeed, it seems the most distinctive (and perhaps the most dangerous) characteristic of that species of the genus *Homo* we conceitedly label *sapiens* is not his wisdom but his reluctance to admit to ignorance. Rather than do so, he is prone to posit an hypothesis and, all too frequently in the absence of supporting evidence, comes to believe it. Thus are myths created.

Prior to the sixteenth century, the hypothesis most frequently invoked to explain all manner of mysterious phenomena was God. The importance man attached to this explanation is evidenced by the power and status acquired by the church. With the scientific discoveries of the late Middle Ages, however, especially the demonstration that the Earth was not the centre of the universe, the fallibility of the church and, by implication, of God, became evident. When the magnitude of the deception became apparent, a vigorous reaction ensued. We are still suffering the effects of this reaction.

One of the early manifestations of it which has had a profound effect on Western civilisation was Descartes's thesis that man could be understood in mechanistic terms. There is no doubt that the application of this assumption has led to remarkable advances in our understanding of how the body functions; indeed, it is the very success of its application that seems to have bewitched us so that we have difficulty in facing the possibility that Cartesian mechanism may be only partially and not completely true, that, despite the brilliant success of scientific materialism, the fact remains there is a component of Man referred to as the soul, the spirit, and/or the mind, which steadfastly resists our efforts to understand it in mechanistic terms.

Our refusal to face this fact is the greatest danger facing the world today. As Leach said, "unless we teach those of the next generation that they can afford to be atheists only if they assume the moral responsibilities of God, the prospects for the human race are decidedly bleak" [11, p. 11].

What the medical profession has failed to realise is the part it has played in this process of dehumanisation. With the decline of faith in the church, it has been to the medical profession that people have turned most frequently in their times of trouble—troubles which are, and always have been, more commonly psychological and psychosocial than physical.

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A profession dominated by scientific materialism has been ill equipped to deal with these troubles. By failing to appreciate that, by convention, the "ticket of admission" to the doctor's surgery (office) is a physical complaint, we have failed to realize that all too frequently the symptoms with which we are confronted are no more than such a ticket—a modus operandi for introducing a discussion of the real problem, the psychological or psychosocial one in the solution of which our scientific training is not only valueless, it is positively dangerous. Thus have we attempted (albeit unwittingly) to "medicalise" problems which are not medical. Thus have we cultivated within society faith in a false philosophy.

The lack of integrity of the profession in embracing so wholeheartedly the philosophy of scientific materialism is demonstrated by the manner in which we have attempted to resolve the problem of the relationship between the body and the mind—a problem that has intrigued and baffled philosophers since the dawn of history.

Though it is as obvious to any schoolboy who blushes when embarrassed that the body and mind cannot be separated as it was to Aristotle 23 centuries ago when he said, "There seems to be no case in which the soul can act or be acted upon without involving the body" [12, 3.1.1.403a5-7], the medical profession, because the mind cannot be accommodated within the philosophy of scientific materialism, has arrogantly ignored this philosophical and physiological enigma.

We have arbitrarily divided diseases into *organic* and *functional* (physical and psychological) except in a small minority of instances where the validity of Aristotle's observation is apparent even to the most biased mechanist. To these diseases we have given the title "psychosomatic," implying this is a special limited category rather than an apt description of all disease. For there is no disease of the body which does not affect the mind, nor one of the mind that does not affect the body.

Nowhere are these contentions better exemplified and the absurdity and danger of the consequences of this false philosophy more apparent than in the history of bronchial asthma. Here is a disease in which the importance of the emotional component (which is not amenable to scientific investigation) has been recognised at least since Hippocratic times. But with our obsessive application of the scientific method and neglect of the art of medicine it has been transformed from a relatively benign disease into one with a considerable mortality. As there still seems to be a good deal of reluctance to accept the evidence of this deterioration in prognosis, a brief review of it is in order.

In the first edition of his textbook which was to become so famous, *The Principles and Practice of Medicine*, Osler stated, "We have no knowledge of the morbid anatomy of true asthma. Death during an attack is unknown" [13, p. 500].

Nor was he alone in this belief. Alexander, in an article entitled "A Historical Account of Death from Asthma," came to the conclusion that "Prior to this date [1930] death during an asthmatic attack was almost unknown" [14]. In support of his conclusion he quoted from the writings of 10 different prominent nineteenth-century physicians from England, continental Europe, and America.

Even as late as 1935, in the English edition of Pfaundler and Schlossmann's *Diseases of Children*, one finds the following: "The outlook in bronchial asthma in childhood is not wholly unfavourable. Life is not endangered. However distressing may be the single attack it is transient even if not treated" [15, 4:484].

Yet, in the second half of the twentieth century, reports of deaths from bronchial asthma appeared with increasing frequency in the medical literature. The mortality reached its peak in the 1960s when there was a rapid rise in certain countries, especially Britain. In England and Wales the highest mortality occurred in the 10- to 14-year-olds where there was an almost eightfold increase in a 7-year period. Speizer, Doll (Sir Richard), the director of the Statistical Research Unit of the Medical Research Council in Britain, and Heal investigated this rise and came to the conclusion it was real; that is, it could not be explained on the basis of any change in diagnostic habits, certification of deaths, or methods of classification. They concluded, "No environmental hazards are known which could have increased the severity of the disease, and the possibility has to be considered that the increase may be due to new methods of treatment" [16].

This advice does not appear to have received the attention it deserved. Interest waned when the mortality showed signs of subsiding, and the cause of the rise and fall and the reasons why the statistics from Britain, Australia and New Zealand differ from those of much of the rest of the world await explanation. So also does the fact that, in New Zealand, the mortality is still rising in the younger age group (where asthma is least likely to be confused with other conditions), as shown in figure 1 (compiled from the official statistics of 10 different countries, all of which code and classify according to the World Health Organisation's International Classification of Disease [WHO's I.C.D.] [personal communications]).

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In addition, a new phenomenon, apparent to anyone whose clinical experience with the younger age group extends over the past quarter-century, has appeared, namely, sudden, unexpected, and unexplained deaths in young asthmatics.

Though no accurate figures exist for the temporal changes in morbidity, according to Frick, in America today "Among children under 15 years of age, two million have asthma and about 250,000 are rendered invalid with intractable asthma that is unresponsive to medical treatment" [17, p. 329]. This 250,000 represents approximately one-half of 1 percent of this age group. It is indeed remarkable if the disease was so severe and so common prior to the second half of the twentieth century that there is not more evidence of it in the paediatric literature of that period.

Despite all these indications of the worsening of prognosis, as recently as 1981 the American Academy of Pediatrics, in discussing asthma, claimed that "Advances in clinical pharmacology and pulmonary physiology have significantly improved the management in children and adolescents" [18].

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It is being claimed, without supporting evidence, with such frequency that people are starting to believe it, that deaths are commonly due to undertreatment [19-21]. The emotional component of the disease, which is obviously so important, is scarcely mentioned in current textbooks. Surely the time has come to take a new look at our management of this disease; to demythicise it.

Anyone attempting to do so is immediately confronted with the problem of defining just what he is talking about. Like so many entities, though everyone knows what asthma is, when it comes to discussing it with precision, to investigating it scientifically, no entirely satisfactory definition exists [22, 23]. Indeed, it is this very fact that is primarily responsible for the confusion and the myths plaguing it today and for our failure to appreciate the limitations of the scientific method in clarifying it.

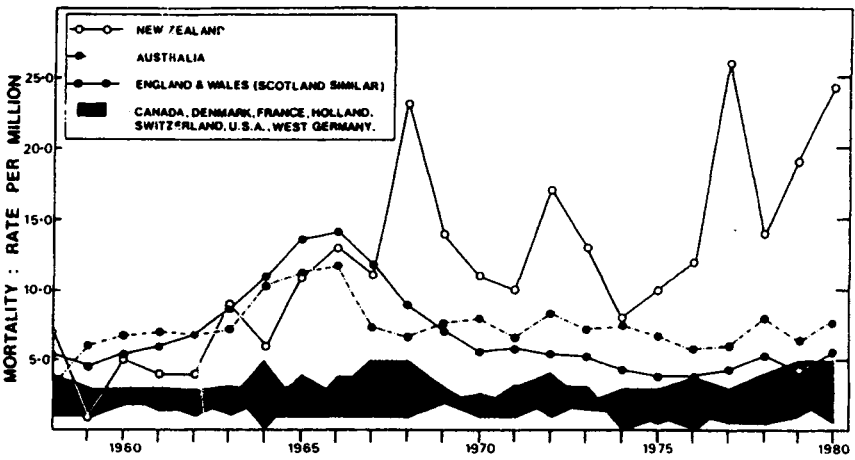
A second problem causing confusion stems from the fact that asthma in children is rather different from that in adults. We seem to have forgotten that it was the recognition almost a century ago that children are not just little adults that led to the separation of paediatrics from internal medicine. As a result of this oversight, recommendations of those caring for adults have been indiscriminately applied to children—with tragic consequences.

So also do we seem to have forgotten the aphorism, "The nature of the onset determines the nature of the illness." The longer a disease persists the more do the accompanying anatomical, physiological, and psychological changes obscure its essential nature. Anyone attempting to understand the pathogenesis of a disease like asthma, which so often begins in childhood, is more likely to be successful by concentrating attention on children rather than on adults.

Even more extraordinary is the cavalier manner in which we have ignored the obvious and irrefutable fact that, in the absence of accurate knowledge of the natural history of any dynamic phenomenon (e.g., a disease), claims to have altered that natural history (e.g., with therapy) cannot be substantiated.

It was these considerations which prompted this effort to obtain a better idea of the natural history of childhood asthma by interfering with it to a minimum during an acute attack.

Fig. 1 ASTHMA MORTALITY IN UNDER TWENTY-YEAR-OLDS
COMPARATIVE DATA FROM TEN COUNTRIES



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The only ill effects we observed were not in the children but in a few parents and their doctors, who had difficulty in accepting such unorthodoxy. The longer the study continued, the less of a problem this became, and the firmer grew our conviction as to the validity of the belief on which it was based. This belief was reinforced by the fact that during the study period four asthmatics under 16 years of age in the Nelson Province died suddenly and unexpectedly at home. All had been receiving conventional antiasthma medication, all showed at autopsy the changes currently considered to be typical of bronchial asthma.

An accurate assessment of whether the study population had suffered in the less obvious way by requiring more hospitalisation was not possible. But a comparison was made between Nelson and the country as a whole with respect to the time spent in hospital at each admission and the frequency of admission of children with acute bronchial disease (personal communication, National Health Statistics Centre). The number of children under 15 years of age discharged from hospital with a diagnosis of asthma or status asthmaticus (493 in the WHO's I.C.D.) was added to the numbers coded under 490 (Bronchitis, not specified as acute or chronic) and 466 (Acute Bronchitis and Bronchiolitis) which were the code numbers used for wheezy and stress bronchitis, the diagnoses we used in preference to asthma. On this basis, though the average time spent in hospital in Nelson during the 3 full calendar years of the study (1979-1981) was 5.02 days compared with the national average of 4.15 days, the frequency of admission in Nelson fell by 37 percent (from 437 to 275/100,000/year), whereas in the country as a whole it rose by 23 percent (from 698 to 858/100,000/year).¹

Because the figures pertain to more than asthma (which in the National figures constituted 68 percent of the above admissions), because of the short time span and the relatively small number of patients in Nelson, any conclusions drawn from such a comparison must be tentative. But it would seem unlikely that the study resulted in any significant increase in the total amount of time spent in hospital by the children in the study population—especially in view of the fact that unofficial figures for Nelson show that the average duration of stay in hospital of children with the above code numbers during the 7 months the study continued into 1982 was 3.5 days, and an estimate of the admission rate for the whole year obtained by extrapolation of the admission rate for the first 7 months was under 300/100,000/year.² And although the low admission rates for Nelson could be due to intrinsically milder disease, the fact that the aforementioned four deaths were more than twice the number to be expected from the national rate renders this explanation suspect.

The other measure adopted to determine whether the study population had been harmed in any way was to seek the opinion of our colleagues. Accordingly, at the completion of 4 years of the study a questionnaire, to which an anonymous reply was requested, was sent to all the general practitioners in the area asking whether they believed any of their patients had suffered by not receiving "specific" medication for their asthma while in hospital.

Of the 43 polled, 39 replied, and of these only one answered unequivocally in the affirmative, adding, "numbers are not large but should be judged by the number of admissions." His answer to the question, "In what way?" (had the patients suffered) was, "1. Emotionally unnecessary separation from families. 2. Failure to relieve distress which is real to the patient and minimised by some physicians to almost casual [*sic*] in their attitude."

The practitioners were also asked whether, as a result of the management of the children in hospital, their general approach to the treatment of asthma had changed in any way. Of the 37 who responded to this question, 26 (70 percent) answered, yes. And, in answer to the question, "Had the amount of medication prescribed for asthmatic patients changed as a result of the study?" 21 (58 percent) of those who answered stated it had decreased. None reported an increase. It should be noted that some of the physicians, because of the size and/or age structure of their practices, had had little experience with the study; others, having previously worked on the children's ward, had already accepted the treatment regime.

¹Based on health department's intercensus estimates of populations. If one uses the 1981 census populations, the figures are 39 percent and 23 percent, respectively.

²The 1982 statistics, which were not available at the time of submission of this manuscript are being presented in combination with the earlier figures in a separate article presently in preparation.

Methods

The study began in April 1978 at the Nelson Hospital—the only hospital treating acute medical problems in a relatively isolated rural province with a population around 65,000 at the time of the study in the northwest corner of the South Island of New Zealand. The hospital has one children's ward, and, although there is no fixed age limit for admission, seldom is a patient over 14 years of age admitted. Medical care is provided by a house surgeon supervised by a full-time paediatrician assisted by two part-time general practitioners. The under-15 population of the province in the 1976 census was 18,258, and in the 1981 census 16,761. In New Zealand all primary paediatric care is provided by general practitioners.

The criteria for inclusion in the study were a child admitted to the ward in whom a pre- or postadmission diagnosis of status asthmaticus, bronchial asthma, wheezy or stress bronchitis was made and/or one who received bronchodilator drugs with or without adrenal corticosteroids either immediately before or during a hospital admission. These broad criteria were chosen not only because of the difficulty in obtaining a generally acceptable definition of asthma but also because we were primarily concerned with what doctors were calling asthma and treating with bronchodilator drugs and/or steroids. As a result, some of the cases included in the study could doubtless more accurately be classified as bronchiolitis or bronchitis without true bronchospasm.

The children admitted to the study were rehydrated (orally, whenever possible), a humidifier blew moist air to the child's face, efforts were made to allay anxiety, disturbing procedures such as blood tests and the taking of nose and throat cultures were avoided unless strongly indicated, and the parents were urged to return home and leave the child in our hands (for reasons, see below)—though if they rejected our advice to leave, we did not press the issue. Physiotherapy was started as soon as possible. It consisted of efforts to get the child to relax during the acute stage; when it could be tolerated, postural drainage was given. Medications such as antipyretics and antimicrobials were given when they were clearly indicated, but bronchodilators with or without adrenal corticosteroids were administered only when our nerves failed us and/or we were concerned that the child might have been adrenally suppressed because of previously administered steroids. In the more severe cases, oxygen was administered, but usually the child objected to the mask, catheter, or tent used, and if so it was discontinued.

Results

When, after 52 months, the study concluded in July 1982, 223 admissions had met the criteria for inclusion in the study. In 183 (82 percent) of these, the child had been managed without any medication at all, and in 219 (98 percent), without bronchodilators and/or steroids. The results are summarised in table 1.

Of the four children who received conventional therapy, three were known to have recently received steroids. In the fourth instance it was suspected, but accurate information was not available. Three were new arrivals in Nelson and had had numerous hospital admissions for asthma prior to their arrival. (In one case, 21 over a 52-month period.) On each occasion, they had received conventional therapy. Two had been on almost continuous antiasthma medication for long periods (5 and 6 years, respectively) and in three there were major psychosocial problems in the families.

Though it goes without saying, it needs to be emphasized, first, that because of the deliberate attempt to avoid generally accepted therapy, the threshold for the detection of adverse effects of the study was lower than normal; and second, that the study would certainly have been discontinued had it become apparent that the children were suffering as a result of it. Indeed, under such circumstance, protests from house surgeons, nurses, and/or general practitioners would doubtless have promptly resulted in its termination. That no such protests were received by the Hospital Ethical Committee speaks for itself.

TABLE 1

SUMMARY OF RESULTS
(N = 223)

Distribution:	
Under 1 year	4 (3.6%)
1-4 years	95 (42.6%)
5-9 years	92 (41.3%)
10-14 years	28 (12.6%)
No. managed without any medication	183 (82%)
No. managed without bronchodilators and/or steroids	219 (98%)

NOTE.—Sex distribution, 142 male, 81 female (M:F ratio, 1.75:1). Average age, 5.45 years.

With the questionnaire was an invitation to criticise the study and to "be ruthlessly honest and quite frank" in doing so. The responses were remarkable in their diversity. For example, while the physician who claimed ill effects to his patients stated, "I cannot accept the philosophy of the Hospital Paediatric Department. . . . The minimal medication policy has created more stress in some homes than existed previously with standard treatment," other physicians made the following comments: "I thoroughly approve of the method under trial and without exception it has worked in all my patients."

"I am using less (almost none) [*sic*] medication and both I and my patients feel [respondent's underlining] better for it."

"I haven't prescribed an inhaler to a new wheezy child for at least three years and probably not to an adult for two years. The patients seem to accept this approach and many parents are actually pleased to cut down the medication their children are receiving."

"Previously I was entirely drug oriented in my approach. Now I make every effort to avoid anti-wheezing medication in children."

"This exercise has had a beneficial spin-off in my attitude to treatment of other conditions."

It is not possible to accurately categorise the comments, but in general 16 (41 percent) were uniformly favourable, a further seven (18 percent) were favourable but had certain reservations, and two (5 percent) were unhappy with the study. The remaining 14 (36 percent) either made no comment or made nonspecific observations.

Parenthetically, the criticism and comments provided a vivid illustration of Balint's contention [24], which might be paraphrased thus: Of all the therapeutic agents used in medicine, that in most common use is the one about which we have the least information. It gets no mention in the textbooks of medicine; no data exist as to the correct dosage, mode, and frequency of administration, of the allergic or toxic side effects.

The agent to which he referred was the doctor.

The real significance of the physicians' response to the questionnaire can only be appreciated if one bears in mind the climate in which the study was conducted. It was undertaken at a time when there was almost universal acceptance (at least in the English-speaking world) of the recommendations of the contemporary medical literature to administer bronchodilator drugs with or without adrenal corticosteroids to children having an acute attack of asthma. It was a time when an enormous amount of money was being expended by drug companies on selling their products. On at least one occasion a pharmaceutical company that had brought an "expert" to New Zealand from Britain paid the fares and overnight accommodation not only of physicians but also of their spouses to attend the visitor's lectures. One can but speculate how much such activities by pharmaceutical companies were responsible for the fact that, during the period 1978-1982, when the population of New Zealand increased by 1½ percent, the health department's annual surveys of the prescriptions filled by retail pharmacies revealed a 46 percent increase in the number of prescriptions for oral (excluding corticosteroids) and inhaled antiasthma medication. The same surveys also showed that the cost of these prescriptions rose by 117 percent (at a time when the Consumers Price Index rose by 74 percent) to reach a total of more than \$16½ million (personal communication). It was a time when lay groups concerned with specific diseases burgeoned to a remarkable degree. The membership of the Asthma Societies in New Zealand increased by approximately 50 percent between 1978 and 1982 (personal communication, New Zealand Asthma Society). With this growth came a good deal of propaganda in the lay news media assuring those afflicted with this condition that great strides had been made by modern medicine in alleviating it with medication.

It is hardly surprising, therefore, that a study conducted in a small, nonacademic unit was met with a certain amount of scepticism and reluctance on the part of both primary care physicians and the parents of their paediatric patients to question the majority opinion of the medical establishment. That the study was able to proceed at all, that it led to the aforementioned changes in the management of wheezing children, speaks for itself.

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Discussion

Almost half a century has elapsed since Pfaundler and Schlossmann asserted, "However distressing may be the single attack it is transient even if not treated" [15]. This study supports this view that the natural history is indeed benign.

How is it, then, there is almost universal belief the condition requires aggressive therapy with dangerous drugs? How is it that this belief persists despite the fact that its implementation has not only failed to reduce the mortality rate but has actually been accompanied by a rise in the rates in certain countries and the emergence of a new unexplained mode of death? How is it more credence is given to the hypothesis that deaths are more commonly due to undertreatment than to the equally valid hypothesis that they are the result of overtreatment? How is it, in a disease in which spontaneous remission so commonly occurs, we have the temerity to liken it to an incurable disease like juvenile diabetes [25] and advocate close monitoring (of pulmonary function) [26, 27]? And how is it we pay so little attention to the emotional component of an illness in which its importance is so patent?

Such an absurd and dangerous state of affairs is surely a manifestation of a very deep-rooted bias. It is submitted that this bias stems primarily from man's reluctance to admit to ignorance, from his preference for acting on unsubstantiated hypotheses rather than doing so—his "obsessive mythopoesis" and secondarily from his faith in a false philosophy: a philosophy which regards man as no more than a machine, as something that can be understood in mechanistic terms.

Such a philosophy ignores another component of vital importance which cannot be understood in such terms. It was regard for this component that enabled this study to be conducted. The ingredients of the component are doubtless many and varied. That which impressed us increasingly as the study proceeded was fear. Whatever the physical basis of the disease, it is a very frightening one. Fear aggravates the bronchospasm to produce more fear. The vicious cycle thus established would seem to be the nub of the problem.

While it may appear to the scientific materialist that the obvious solution to such a problem lies with drugs, the results of the application of this hypothesis have been such that perhaps we should seek a solution elsewhere. Maybe we should turn our attention to the fear. Maybe the conquest of fear is a problem for the individual qua individual. Maybe we do the patient a disservice when we encourage the abrogation of responsibility to us and lead him to believe the solution lies in the contents of a syringe, a bottle, or an inhaler.

Perhaps the best we can do in the light of our present ignorance is to not aggravate the problem in this way. Perhaps we should suggest this to the child's parents, at the same time pointing out to them not only the importance of the primary vicious cycle but also that of a secondary one: which stems from their own fears—a perfectly natural reaction on seeing their child gasping for breath. What many parents fail to appreciate is that fear is more contagious than any viral infection. It was for this reason we encouraged parents to return home and leave their child with us after admission. If they want to help the child they need to learn to control their own fears. What is even less appreciated is the importance of the fears of the medical and paramedical personnel—fears transferred to both parents and child to establish tertiary vicious cycles. It was recognition of this (the importance of which came as something of a surprise) that enabled us to defuse the situation on admission of the child to hospital and probably played a greater part in the success of the project than anything else. Parenthetically, physicians' fears were only too evident in the comments on the study in the questionnaire.

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The validity of these hypotheses is, of course, unproved and likely to remain so, as also is the hypothesis that some of these children may be dying of fright—at least in part. For fear cannot be measured and hence is not amenable to scientific investigation. This does not, however, render it any less real. If we believe so, the problem is ours. As Alistair Connell said: "There are vast tracts of human experience which the scientific method cannot explore and distant horizons of appreciation and understanding which it is not equipped to approach because no parameters of measurement exist in these areas. The scientific method condescends to recognise no world save that which can be perceived, analysed and interpreted by sensory experience. If phenomena cannot be reduced to material terms science cannot deal with them" [28, pp. 18-19].

Finally, as there is no reason to believe asthma is essentially different from any other disease, the question arises, How much of contemporary medicine is an iatrogenic fantasy? It is interesting that, in an era when medicine has become more scientific than at any other period in its history, we appear to have neglected that all important attribute of the scientist—scepticism. The placebo effect which should be of more concern to the scientist than to most has yet to receive the attention it warrants.

We have become "Therapeutic Evangelists" [29], forgetting that, implicit in the doctor-patient relationship is the assumption by the latter that the former will abide by the Hippocratic injunction, "Primum non nocere." To comply with this moral imperative we need to have firm evidence that any contemplated therapeutic intervention will be of benefit to the patient. This requires knowledge of the natural history of the clinical problem with which we are confronted—a situation which pertains in but a small minority of instances. Indeed, strictly speaking, the uniqueness of the individual precludes absolute certainty as to the course any disease will take in one particular person.

How is it, then, we so often ignore this fundamental precept? How is it, as alleged by Illich [5], the Western world has become so "medicalised"? How is it the medical establishment has acquired an empire and status comparable with that of the church in the Middle Ages? Can the validity of the earlier contention, that no longer is the primary function of medicine that of a service to patients, be denied?

Contemplation of such questions might be of benefit to both the profession per se and to society at large. For just as the myths of religion were found lacking in the late Middle Ages, with rather dire consequences, so is there increasing evidence, as manifested by increasing criticism of modern medicine by the lay public and the establishment of alternative health styles, that the myths of science are also being found lacking. And if, as suggested, the profession has played a major role in the dehumanisation of society, such soul-searching might make a significant contribution to the process of rehumanisation.

Should we retreat, as some are doing, back to the myths of religion? Or have we reached a stage in the process of evolution when we might be able to muster the courage necessary to live with uncertainty and face the fact that the solutions to many important problems are unknown and likely to remain so for the foreseeable future? Though the scientific method will doubtless help in their elucidation, it may not hold all the answers. Perhaps less harm would result from admitting our ignorance than by acting on unsubstantiated hypotheses.

Would it help to reclassify man? *Homo mythofabricans*, perhaps?

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