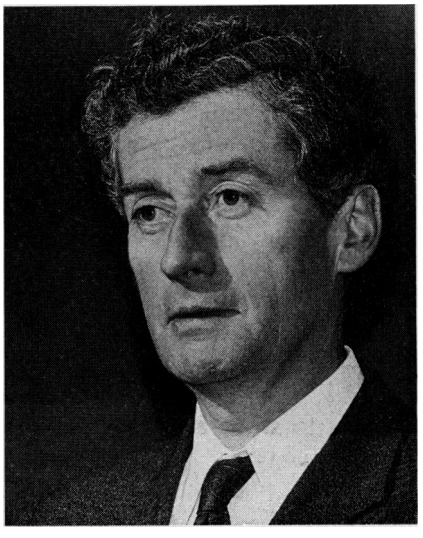
Fifty years of progress *

PROFESSOR JAMES MCCORMICK, M.A., F.R.C.P.I., F.R.C.G.P.
Department of Social Medicine, Trinity College Medical School, Dublin



AMONG my favourite aphorisms is Aldous Huxley's on happiness. "Happiness" he said, "is like coke: it is a by-product." One of the by-products of my being invited to deliver the James Mackenzie lecture has been reading the lectures of my predecessors. This would ordinarily have been a source of, if not happiness, great pleasure, but under the circumstances my pleasure was marred by the realisation that I must attempt to match the high standard which they have set.

It is almost 50 years since James Mackenzie died. Reading his great books and the two excellent biographies (Wilson, 1926; Mair, 1973) is a humbling experience. It is easy to understand why humility should be an appropriate response to Mackenzie's achievement.

As a general practitioner he saw large numbers of patients who suffered from angina pectoris, many of whom had had myocardial infarctions. In the 1914 edition of his *Diseases of the heart* he includes 100 illustrative case histories: 42 of these are cases of angina pectoris. These beautiful histories, often accompanied by the results of post-mortem examination, can leave us in no doubt about the underlying pathology.

For example: "Born 1843. The patient was a sober, industrious man, and had led an active life. He had fair health, though suffering at times from rheumatic-like pains in his back. In September 1891, 48 years of age, after his midday meal he was hurrying along the street, when he was seized with a choking sensation and a pain which started over his left breast, striking up both sides of his neck. He was forced to stand still for 20 minutes until the pain had subsided. Similar attacks occurred during the following month, and he consulted me on 28 October 1891. He described the pains as always starting over the left breast, and radiating sometimes into the left armpit and down the left arm, and sometimes into the neck. He felt when the pain was on as if he were going to die.

On examination I found the patient was healthy-looking and well nourished and with a ruddy complexion. The pulse was regular and of good strength, and the arteries slightly thickened. The heart was normal size, the dullness extending 3½ inches to the left of the middle line. The sounds were clear and free from murmurs. . . . On 20 October while walking, the patient had a very severe attack, the pain striking into the left chest and into the jaw. When the pain was bad, the mouth filled with saliva.

After resting the attacks diminished in severity, until, in December 1891, he was able to walk 200 yards with comfort. If he walked further, or if he attempted to walk quickly, the pain would pull him up. The pain latterly had struck into the left arm and extended to the little finger.

On 30 December 1891, while sitting at his desk, he died suddenly. On post-mortem examination the heart was found to have ruptured, the pericardial sac being full of blood. There was a small aneurysm, the size of a marble, in the wall of the left ventricle, where the ventricular cavity was separated from the pericardial sac by a thin wall consisting only of pericardium and endocardium. In this thin wall there was a narrow slit. The coronary artery was very atheromatous."

*The 1974 James Mackenzie lecture was delivered on 16 November 1974 at the British Medical Association House, London. It is printed here by kind permission of the Editor of *The Practitioner*.

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What is surprising is the failure of Mackenzie, Keith or his other contemporaries to correlate the changes in the coronary vessels with the changes in the myocardium. Also surprising was the delay in recognising ischaemic changes in the electrocardiogram. Mackenzie had access to cardiography through his friend, Thomas Lewis, but it was used primarily to study arrythmias and to confirm the diagnosis made with the polygraph.

The polygraph

The polygraph, which was invented and perfected by Mackenzie while he was a busy general practitioner in Burnley, consisted of a series of tambours which, placed over the apex beat, the radial pulse and the great veins of the neck allowed simultaneous recordings of pulsation to be made on a revolving drum. Initially he used the smoked drum, still a feature of my education in physiology at Cambridge 50 years later, but subsequently, with the aid of a skilled watchmaker, he was able to modify and improve the apparatus using a series of inked pens.

It needs little imagination to envisage the patience and unrelaxing determination needed to set up this apparatus in the crowded homes of the Burnley mill workers. The tambours required delicate adjustment and were easily upset by any movement on the part of the patient: many of the houses were poorly lit and often he would have to work by candlelight. Always he would be conscious of the work that remained to be done, the other calls to be made, the overflowing waiting room at the surgery.

Yet, under these unfavourable conditions and using this simple apparatus he became the first to study and identify correctly the significance of the pulsations in the great veins of the neck.

Figure 1 is one of his recordings reproduced from *Diseases of the heart*. This shows that the ' a ' wave produced by auricular or atrial contraction overlaps the ' v ' wave of ventricular systole. He was able, correctly, to deduce that this must be a case of nodal rhythm, atrial and ventricular systole occurring synchronously.

Incidence of ischaemic heart disease

Much has been written and much has been said, sometimes in highly emotional terms, about the ' increase ' in the incidence and prevalence of ischaemic heart disease. The Executive Board of the World Health Organisation said in 1969: " Coronary heart disease has reached enormous proportions, striking more and more at younger subjects. It will result in coming years in the greatest epidemic mankind has faced unless we are able to reverse the trend by concentrated research into its cause and prevention ".

Yet Mackenzie at the end of his life was able to say that " On going over my notes I find records of the death of 380 patients who had consulted me for attacks of angina pectoris. I have no doubt a great many have died whom I have not been able to trace ". Figure 2 reproduced from *Angina pectoris* published in 1923 " shows the ages at which 284 people died who suffered from angina pectoris where the death was due directly to the condition which caused the angina." Of particular interest is the number of deaths in relatively young people.

There is not time here to discuss at length the evidence for a real increase in the incidence of coronary heart disease, but I would draw attention to the dangers of assuming that hospital experience of a disease is an accurate reflection of its incidence or prevalence in the community. Cardiologists and other hospital physicians only began to see considerable numbers of myocardial infarctions after the second world war. Mackenzie, as a general practitioner at the turn of the century, was quite familiar with this common disease. Yet John Henderson in his 1964 Mackenzie lecture said that he could not recall ever having seen a single case while an undergraduate.

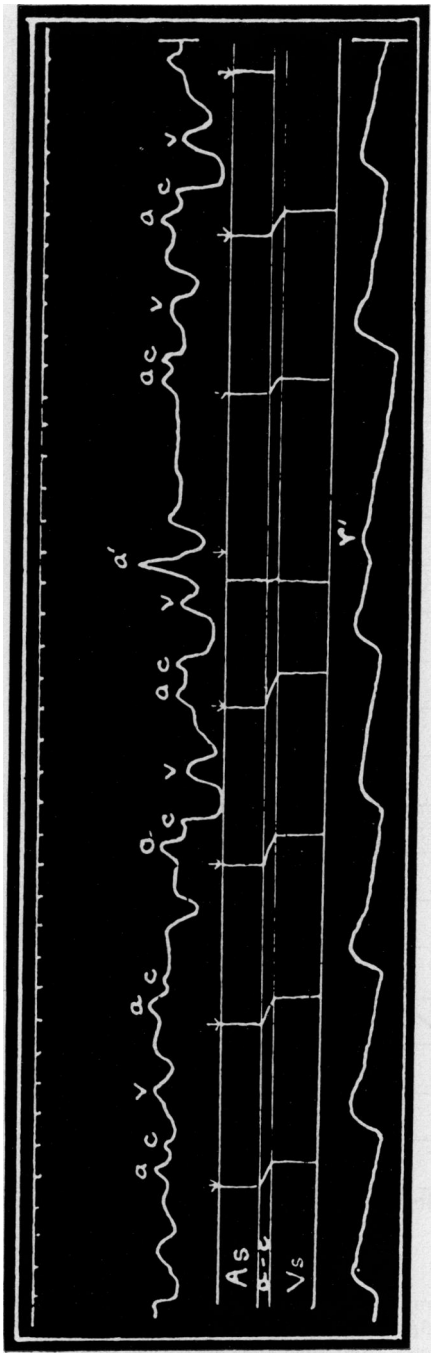

Figure 1

Shows a nodal extra-systole (*a'* and *r'*); the auricular and ventricular systoles as shown in the diagram are premature and simultaneous. [Mackenzie, J. (1914). *Diseases of the heart*. London: Frowde, Hodder and Stoughton.]

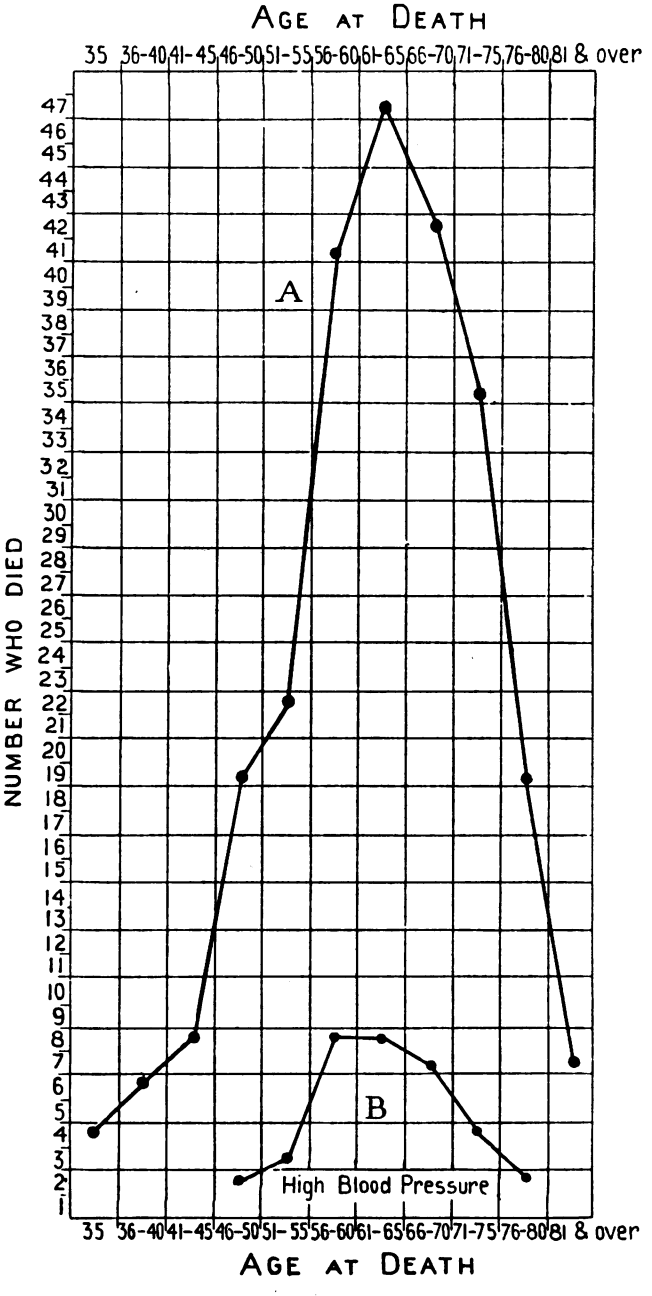

Figure 2

Statistical diagram. The figures at the side show the number of deaths, and the figures at the top the ages in 5-year periods, of patients who suffered from angina pectoris. The smaller curve (B) shows the same facts about patients who had a systolic blood pressure over 180 mm Hg.

Table 1, taken from a paper by Loudon *et al.* (1953), shows the number of admissions to the Radcliffe Infirmary with the diagnosis myocardial infarction for the years 1946–1951. The dramatic threefold increase between 1949 and 1951 coincided with the growth in the use of anticoagulants and a belief on the part of general practitioners that hospital admission offered useful treatment for their patients.

TABLE 1

Admissions to the Radcliffe Infirmary—
MYOCARDIAL INFARCTION

1946–20)		1950	1951
1947–14)	Mean 19	32	66
1948–24)			
1949–18)			

Loudon, I. S. L. *et al.* (1953). *British Medical Journal*, **1**, 911–13.

Classification of morbidity

Mackenzie believed that the main bar to the progress of medicine was our ignorance, particularly our ignorance of the beginnings of disease. When he went to St Andrews the first task he undertook was a form of morbidity survey. He immediately discovered, what each of us who has attempted to record morbidity has discovered, that the diagnostic labels he was using were inexact. Unlike most of us he did not allow the act of labelling to become a cloak for ignorance.

Six categories

He classified illness into six categories:

" Number one consists," he said, and here I quote from *The beloved physician* (Wilson, 1926), " of those ailments which are most thoroughly understood. An example is an inflamed eye caused by the presence of a foreign body, a grain of sand in the eye; another example is the colic caused by the passage of a stone. Some of the diseases caused by germs may be examples, but we want to know why germs which are nearly always present in or about the human body, for instance, the germ of pneumonia and the germ of ' consumption ', are able to strike down some few people. We think that some element, hitherto unrecognised, must play a part in enabling these germs to become dangerous.

" Class number two consists of diseases which are probably due to germs, but in connection with which no germ has, as yet, been found; for example, influenza and rheumatic fever.

" Class number three includes diseases which may or may not be due to germs, e.g. asthma.

" In class number four we place angina pectoris, auricular fibrillation, and cancer—diseases which probably follow some other, known or unknown disease.

" Class number five includes such diseases as have been recognised only by a single symptom, for example, constipation. This symptom gives no clue at present to the underlying condition.

" In class number six we place those symptoms which seem to be unco-ordinated, for example, bilious attacks, and neurasthenia.

" Adding our private cases to those seen at the Institute, we have examined about 1,000 people in order to make this classification. We find that:

11	per	cent	fall	into	Class	No. 1
2	,,	,,	,,	,,	,,	No. 2
9	,,	,,	,,	,,	,,	No. 3
6	,,	,,	,,	,,	,,	No. 4
22	,,	,,	,,	,,	,,	No. 5
50	,,	,,	,,	,,	,,	No. 6 "

He paused and looked up.

" In exactly half the cases a doctor sees in practice ", he declared, " he is unable even to piece together the symptoms shown to him to make a rational diagnosis. In about three quarters of the cases he sees, he cannot make a diagnosis worth calling by that name—for ' constipation ', to take but one example, is not a diagnosis."

The categories today

It is now almost 50 years since James Mackenzie died—how far have we advanced?

We can add to his list of class one ' most thoroughly understood diseases ' several conditions. Vitamin deficiency, endocrine disorders, some inherited and congenital defects. But the contribution of these diseases, for example Addisonian anaemia, thyroid disorder, Down's syndrome and erythroblastosis foetalis to the spectrum of morbidity in general practice is in total very small.

We can add to his class two, a number of illnesses we now recognise as being definitely due to germs—but almost all of those we add are due to viruses. His class three has probably diminished but we might still include his example of asthma and might wish to add rheumatoid arthritis and conceivably cancer. His class four must still include ischaemic heart disease, and cerebrovascular disease which together account for the major part of our mortality.

Classes five and six include the bulk of the morbidity which we see: they include anxiety and depression; headache and constipation; tiredness and psychosocial malaise, and they include those who seek our help in order to manipulate their environment by seeking confirmation of the sick role.

In 1958, The College of General Practitioners Research Committee (1958) surveyed 11 practices: the average for " firm diagnosis " was 55·5 per cent with a range of 25·6—72·4 per cent. The upper figure is identical with that of Mackenzie, the average figure not very different. Thomas in 1974 reported that of 3,848 consultations in 43 per cent he was unable to make a diagnosis. These 43 per cent received " no effective treatment other than contact with the doctor " but most, alas, received a placebo.

Role of medicine in society

Mackenzie believed that it was only our ignorance and our failure to achieve early diagnosis that prevented us achieving the ideal of effective treatment and cure. Ivan Illich (1974) has recently made us aware of the results of such a belief. " By transforming pain, illness, and death from a personal challenge into a technical problem, medical practice expropriates the potential of people to deal with their human condition in an autonomous way and becomes the source of a new kind of unhealth.

" By becoming unnecessary, pain has become unbearable. With this attitude, it now seems rational to flee pain rather than to face it, even at the cost of addiction. It also seems reasonable to eliminate pain, even at the cost of health. . . . The new suffering is not only unmanageable, but it has lost its referential character. Only the recovery of the will and ability to suffer can restore health into pain.

" Professional practice is both ineffective and increasingly sought out. The technically

unwarranted rise of medical prestige can only be explained as a magic ritual for the achievement of goals which are beyond technical and political reach ".

Analysis of treatments

Our only satisfactory treatments are surgical, which are achieved at the price of mutilation, and the replacement of known vitamin or nutrient lacks. Correction of endocrine imbalance approaches the ideal, in, for example, the treatment of hypothyroidism by thyroxine, but even here the balance is delicate and the administration of thyroxine affects the production of thyrotrophic stimulating hormone by the anterior pituitary. Effective antibiotics have transformed the prognosis in bacterial infections. Meningitis, puerperal sepsis, lobar pneumonia and osteomyelitis have almost disappeared as killing diseases. Immunisation has almost eradicated diphtheria. Rheumatic heart disease has diminished to a minute proportion of the modern cardiologist's concern. Mackenzie would be overjoyed.

Nevertheless, every drug we use has effects other than those which are regarded as useful and although in about 50 per cent of the cases we see we can make no meaningful diagnosis and although in many others the only treatment we can offer is symptomatic, few of our patients escape treatment with drugs.

Symptomatic treatment is by no means confined to the treatment of mental malaise: it must include the use of steroids in rheumatoid arthritis, the prescription of laxatives, and the use of diuretics for swollen ankles. Such treatment has many almost inevitable sequelae. It costs money which health services can ill afford to spend; in the case of the psychotropic drugs it frequently diminishes the ability of the patient to perform as a healthy human being. It causes dependence, both physical and emotional, upon drugs. Most serious of all, symptomatic treatment is guaranteed to reinforce the patient's belief that the cure of their malaise lies outside themselves.

Symptomatic treatment is only completely justifiable when either time or medical intervention are going to end the suffering. It is therefore justified in the case of the dying, to relieve the pain of labour, or the passage of a renal stone.

Reviewing previous experience

In making the transition from busy general practice to what now appears to be an equally busy academic life I have had a little time " to stand and stare ". In taking stock of what seems valuable in my achievement as a general practitioner I am a little surprised to find that my technical skills as a physician have made an almost negligible contribution to the satisfaction I have derived from being a family doctor. Rather, in contrast, I recall the unsatisfactory struggles with sebaceous cysts when inadequate haemostasis and innate clumsiness led to partial excision. I recall, with shame, failures to diagnose early carcinoma: occasions when clinical arrogance and attaching too much weight to psychological and social factors delayed appropriate referral. In preparing a balance sheet I find little on the credit side which might be taken to represent clinical skill. No doubt I correctly diagnosed a number of abdominal emergencies, restored a few patients in hypoglycaemic coma to consciousness, and once by prompt intravenous therapy in massive haematemesis may have saved a life.

My satisfactions have been derived from a wide variety and large number of close emotional ties. Some of these are still maintained by my devoting a couple of days a month to what Marshall Marinker aptly described as " my love round ". This is dangerous ground: I would have you believe that this involvement has had therapeutic usefulness; that it has done more than create dependence upon me; that it has done more than satisfy my own need for love.

I was encouraged to find Collin Baker of North Carolina writing in 1974 that: " Every seed of compassion and concern for people with which first-year students

arrive must be cultivated from the outset. Their training must stop tacitly suggesting that it is somehow unprofessional to become emotionally involved with the patient and his family and that the finest doctors are coldly ' scientific '."

The doctor as therapy has advantages over diazepam: the emergence of dependance is under the doctor's control, dosage is relatively infrequent, it has no direct affect on cerebral function and overdosage is seldom lethal.

Mechanistic model of medical care

Mackenzie (1909) in *Symptoms and their interpretation* remarked that " The tendency to be led by tradition is very powerful, and it is difficult to free the mind from beliefs that have been inculcated with the acquisition of knowledge." We must free our minds from beliefs that have been inculcated with the acquisition of knowledge. Our knowledge has its basis in the relatively exact physical sciences and our self-image as doctors and the nature of our training all conspire to make us believe that the illness which we see is manageable in terms of a mechanistic model. Table 2 illustrates how inappropriate is our response in the case of some common diseases.

TABLE 2

Illness	*Diagnosis*	*Treatment*	*Cure*	*Natural history*
Vitamin deficiency	Accurate	Apposite	Invariable	Fatal
Thyrotoxicosis	Accurate	Apposite	Usual	Fatal
Acute appendicitis	Fairly accurate	Apposite	Usual	Sometimes fatal
Lower urinary tract infection	Inaccurate	Sometimes apposite	Common	Recovery
Cancer	Accurate	Sometimes apposite	Sometimes	Fatal
Virus respiratory tract infections	Inaccurate	Symptomatic	Usual	Recovery usual
Rheumatoid arthritis	Accurate	Symptomatic	Unusual	Rarely fatal
Ischaemic heart disease	Accurate	Supportive	Never	Frequently fatal
Cerebrovascular accidents	Sometimes accurate	Supportive	Never	Frequently fatal
Diabetes mellitus	Accurate	Supportive	Never	Fatal
Anxiety	Inaccurate	Symptomatic	Never	Recovery

Man has always sought mechanistic explanations for phenomena which he could not understand. Our predecessors relied on extensive, if almost therapeutically useless pharmacopoeias and we are inheritors of their tradition. As Tudor Hart (1974) said in his Milroy Lecture, ". . . a diagnosis is a plan for action and in internal medicine the action that is easiest to take is, in general practice at least, to write a prescription. . . . The pressure on doctors is to treat rather than to observe and educate . . .". Doctors still believe that their patients require a placebo, although their patients have become acutely aware of the dangers of pill taking and their medicine cupboards provide eloquent testimony of their lack of faith. Prescribing a placebo for a patient who has come for reassurance can only reinforce the belief that all is not well.

Our patients deserve of us accurate diagnosis and appropriate treatment, but when accurate diagnosis is impossible and appropriate treatment unavailable we delude both them and ourselves by using diagnostic labels and prescribing specific treatments. When we as general practitioners are in a position to cure illness, cure is usually readily achieved. But cure only signifies postponement of death: it does not confer immortality. No matter how far medical science advances it can never eradicate human suffering or the fear and fact of death.

The price paid for help in terms of symptomatic relief by means of drugs is unacceptable. We must rediscover the strengths and skills of our predecessors who, although

relatively ignorant and therapeutically impotent, were justly held in high regard by the society in which they lived. This they achieved by making manifest their care for their patients as individual human beings, by proving reassurance based upon their knowledge of disease and by wise and acceptable advice.

Care, reassurance, and advice: are these proper roles for a doctor? In this scientific age, as I have suggested (McCormick, 1974) neither our self-image as doctors nor our methods of medical education provide motivation towards *caritas*. Yet, it is only caring, sympathy and the emotional involvement of one human being with another that makes communication possible and provides a proper basis for trust. Once we recognise clearly that our objective may no longer be to cure illness but rather, in Illich's words, " to restore the potential of people to deal with their human condition " caring becomes no longer a luxury, a marginal contribution to the alleviation of the discomforts of illness, but the only possible basis for useful action.

Were he able to visit one of our great hospitals, Mackenzie's response to what he observed would not perhaps be very different from his response to his " young lions " described by McNair Wilson. He much admired their achievement in technology, but feared that they, so interested in their research, had forgotten the reason they were doctors. " Surely " they asked " it is more important to carry out research work than to engage in practice? " McNair Wilson was a witness to this exchange and concludes his account with these words: " Mackenzie went back to his consulting room with troubled eyes ".

Reassurance only becomes effective if based upon trust. As doctors we claim the trust of our patients by virtue of our knowledge and of our skill. But in order to be effective, trust must be emotionally as well as rationally based. Our possession of the title 'doctor' provides a reason for our being consulted, but we can only become effective if we inspire faith. Illness threatens the integrity of the individual and none of our patients can view their own illness without emotion.

If our objective is " to restore the potential of people to deal with their human condition," blind, unthinking faith in the doctor as miracle worker is not only inappropriate but bound to lead to disillusion. On the other hand, trust based on experience is the essential foundation for reassurance and advice.

Despite the mobility within our society, general practitioners have with many of their patients a relationship which, although it is built up of a series of brief encounters scattered in time, has grown to be important and lasting. This continuity, this commitment of person to person, provides the essential background to a trust which can be used to provide acceptable, and therefore useful, reassurance and advice. Our patients are right when they complain that the organisation of general practice has threatened what they most valued.

Side-effects of the team

The concept of the team, a concept which our College has done much to foster, has been harmful in that it has threatened personal care (" looking after people as people "). Sir Thedore Fox in 1960 went on to say " Unquestionably the practitioner needs helpers in his surgery or office and should be able to call on a wide range of skilled ancillaries outside; but the particular object of his independent existence may be defeated if he leaves all dressings to the nurse, sympathy to the receptionist, messages to the secretary and the solution of home problems to the social worker." " If somebody else is to do all the small things for the patient, under the doctor's distant supervision, personal contact will be reduced to a minimum: and if this happens, the patient might just as well go to hospital."

Unfortunately the tasks which are delegated are determined more by the doctor's conception of his role than by the nature of other peoples' skill. The extent to which

the nurse can contribute to the diagnosis and management of physical illness has been relatively neglected and both she and the social worker are employed to protect the doctor from the assaults of those who are finding it difficult ' to live with their human condition '. As Malleson (1973) has pointed out in his recent book, social remedies such as financial aid or new housing which are used as symptomatic relief are no more effective than medicines used for the same purpose. It may appear that I ignore the fact that all members of the team will become emotionally involved with their patients and that in many instances the nurse, the health visitor, the social worker or the receptionist will have a closer and more intimate relationship with patients than the doctor. But the doctor is by virtue of his knowledge in a special position. Because the emotional and social content of illness presents in somatic terms only he is in a position to distinguish migraine from sub-arachnoid haemorrhage, or simple anorexia from gastric carcinoma.

The team can readily conspire together to reject some patients. This conspiracy is usually subconscious but may be serious. On many occasions my irritation on being told that a certain patient has arrived without an appointment has been interpreted by my staff as a criticism of their competence rather than a complaint about the life of a general practitioner. This in its turn has been translated into antagonism towards the patient who has been added to the list of the ' bad ' patients, the impossible, and the inconsiderate.

Practical preventive medicine

Proper use of the team should allow us to devote more time to the prevention of disease. Myocardial infarction, particularly if accompanied by functional cardiac arrest is a good way to die, but it is sad if death occurs when a man or woman is still active and still carrying major responsibilities. In any one year about 63 per cent of a general practitioner's registered patients, who are between 25 and 65 years old, consult him (Royal College of General Practitioners and the Office of Population Censuses and Surveys, 1974); within a longer time such as five years the majority, although not all, will have had occasion to see him. For all of these patients records exist which frequently do, and with very little expenditure of effort could, include data about family history, occupation, smoking, alcohol intake, exercise, blood pressure, and weight.

Thus most of the known risk factors are easily identified and a bad family history, hypertension, or obesity can provide an indication for the estimation of blood lipids. Tudor Hart (1970) has shown that additional effort directed towards ensuring that all adults have their blood pressure recorded can result in the identification of considerable numbers of hitherto undiagnosed hypertensives. An increased awareness of the usefulness of identifying risk factors could make, at relatively low cost, a much greater contribution to the problem of coronary heart disease than centralised screening programmes. Acceptance by doctors of roles more appropriate to their patients' needs can only be achieved by a major re-orientation and such a re-orientation can only be achieved through education.

Most of this lecture was finished before I had the opportunity to read Marinker's William Pickles lecture (1974). The title of his lecture was *Medical Education and Human Values* and he concluded with these words " If the College continues to develop as though our tradition of care is the tradition of the country doctor from Wensleydale, then we may hope to celebrate in our clinical work and in our teaching the values of human dignity." The inappropriateness of *scientia sine caritas* to human needs has led to growing disillusion with the present state of medicine and uncertainty within the profession. This uncertainty has found expression as dissatisfaction made manifest in threats of work to rule and a tendency to blame all the ills of health services upon inadequate finance.

McNair Wilson, who came to know Mackenzie well did not entitle his biography *Mackenzie—cardiologist extraordinary* or even *Mackenzie—general practitioner extraordinary*, he entitled it *The beloved physician.* Within the perspective of history we can recognise that Mackenzie's major contribution to improving the lot of humanity, rests on his elucidation of arrythmias, his recognition of ' effort syndrome ' and the nature of visceral pain, his teaching, and his great books. Yet his biographer, and I believe, Mackenzie himself, wished that he should be remembered as a beloved physician. He was not able to influence for good by therapeutic interference more than a minute proportion of the illness which he saw—but he cared. He recognised, more than any of his contemporaries, the extent of his ignorance, and he strove to diminish it.

We need to rediscover the extent of our ignorance. We need to set for ourselves goals which are attainable within the limits of our human condition. " Happiness is like coke—it is a by-product."

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Addendum

The photograph of Professor J. S. McCormick was taken by Dr Ivor Cookson.

REFERENCES

Baker, C. (1974). *Journal of Medical Education*, **49**, 229.
College of General Practitioners (1958). Research Committee study. *Journal of the College of General Practitioners*, **1**, 107–128.
Fox, T. F. (1960). *Lancet*, **1**, 743–760.
Hart, J. T. (1970). *Lancet*, **2**, 223–226.
Hart, J. T. (1974). *Journal of the Royal College of Physicians of London*, **8**, 299–314.
Henderson, J. M. (1964). *Practitioner*, **192**, 128–140, and *Journal of the Royal College of General Practitioners*, **7**, 9–23.
Illich, I. (1974). *Lancet*, **1**, 918–921.
Loudon, I. S. L., Pease, J. C. & Cooke, A. M. (1953). *British Medical Journal*, **1**, 911–913.
McCormick, J. S. (1974). *Proceedings of the Royal Society of Medicine.* (In press).
Mackenzie, J. (1909). *Symptoms and their Interpretation.* London: Shaw.
Mackenzie, J. (1914). *Diseases of the heart.* Third edition. London: Frowde, Hodder and Stoughton.
Mackenzie, J. (1923). *Angina pectoris.* London: Frowde, Hodder and Stoughton.
Mair, A. (1973). *Sir James Mackenzie, M.D. 1853–1925: General practitioner.* Edinburgh and London: Churchill Livingstone.
Malleson, A. (1973). *Need your doctor be so useless?* London: Allen and Unwin.
Marinker, M. (1974). *Journal of the Royal College of General Practitioners*, **24**, 445–462.
Royal College of General Practitioners, Office of Population Censuses and Surveys and the Department of Health and Social Security (1974). *Morbidity Statistics from General Practice.* London: H.M.S.O.
Thomas, K. B. (1974). *British Medical Journal*, **1**, 625–626.
Wilson, R. M. (1926). *The beloved physician.* London: Murray.