

THE SCIENTIFIC APPROACH*

J. KELMAN DRUMMOND, M.B., CH.B., F.R.C.P.E., *President, Natal Coastal Branch (M.A.S.A.)*

A valedictory address, unlike a lecture, is not followed by question time, and thus its deliverer can 'get away with murder'. Such licensed killing may be highly commendable, if it is correct to say that the truth can kill, and in case it is alleged that I have not spoken the truth, I would defend myself by saying that the thoughts I express are not original. They represent in fact the opinions of philosophers, who often offended when they propounded certain truths, but who were subsequently shown to have expressed beliefs which fitted into a pattern of the evolution of thought.

When I say philosophers, I mean anyone who has made a major contribution to the pursuit of wisdom, whether labelled philosopher, scientist or artist, for philosophy is the parent of all scientific disciplines and artistic endeavour. The biochemist who derides metaphysical speculation, himself propounds some wild hypotheses, which become scientific fact if he is subsequently able to prove them.

In considering the evolution of thought there is a suggestion that some Darwinian principles apply, and that the rule of the survival of the fittest is apposite to the development of thought. By this I mean that conservative concepts tend to become dominant in any cultural milieu, regardless of the fact that this milieu is constantly changing, and that this change is at present not truly predetermined.

What might be considered mutant strains of thought, at first occupying a 'recessive position' in regard to a particular moment in time, are later found to fit in with a changing

social environment. As in nature other 'recessive ideas' do not fit the change and become non-viable. However, dominant strains of thought have not suffered the fate of the mammoths of history, as we shall see later. This whole process has to do with what sociologists call the cultural lag.

Of course the evolution of thought occupies an infinitesimal time in the history of evolution, and dates from the time when well-formed frontal lobes first developed. Even here, if man in his present form has existed for about one hundred thousand years, he has only put these portions of his anatomy to some productive use for the last one-fifth of this time. Long before this, various species of animal life were evolving and disappearing, and in fact over 99% of these animal forms have failed to survive the test of time. However, the same thing has not happened to our mental concepts, and we are all familiar with individuals whose reasoning differs little from that of our simian ancestors.

I suspect that this statement is a little unfair to the apes, whose environment has hardly changed. Nevertheless, this failure to expunge from the record ideas which are not apposite to a particular cultural milieu has one interesting sequel. This explains why such a large number of the patients referred to us exhibit what we term symptoms of stress or are inadequate to their particular situation in life. They tend to be labelled one or other type of psychoneurotic, according to which school of thought the doctor adheres (for this is a most confused and immature science) after which we put them in a particular corner to play with a bottle of tranquilizers.

In truth the psychoneurotic ought not to exist, in the sense of personal failing, for he is representative of our failure to develop a system of thought where anybody with a reasonable intelligence quotient, and who is not frankly psychotic, can find his particular niche in society.

Bronowski, in his book *The Common Sense of Science*, mentions the 3 ideas which have been essential to the development of science. These are the idea of order, the idea of cause, and the idea of chance. Aristotle, he points out, believed that an apple dropped to the ground because it was in the nature of apples to drop to the ground, and many of our patients,



Dr. Drummond

*Valedictory address.

without reasoning the matter at all, believe that it is in our nature to develop a cold if we are suddenly exposed to a drop in temperature.

Newton would have explained to our patient, had he known of the existence of the cold virus, that the drop in temperature coupled with the presence of one of the cold viruses would have led, precisely, to the development of the catarrhal symptoms which we label a cold. Newton of course was not quite right, and a modern scientist would be able to predict just what sort of chance we stood of developing a cold, in the presence, among other things, of a cold virus and a drop in temperature.

These simple examples illustrate the fact that in his approach to reality and truth modern man exhibits a sort of cultural lag which covers a period of some 20,000 years. It is difficult for us today to conceive of a time when causality was not an essential part of reasoning and yet before the time of Newton, and particularly during the Middle Ages, this was so.

During the early stages of most civilizations, truth and knowledge were considered to be the prerequisites of one or other supernatural deity. This was, in view of man's limited reasoning powers, a natural development. Unfortunately, as a seemingly logical development of this, truth came to be formulated in the shape of sets of unchangeable rules. This implied that truth was something static, but we now know that, although truth as an entity may be eternal, the truth of any particular matter is an evanescent, but nevertheless exciting, stimulating thing. Truth in this sense has a dynamic quality.

When accepted as a principle this may seem to make for instability in our approach to reality, but ultimately it is less disturbing than the situation where an unchangeable rule does not allow for a new comprehension of the truth.

Bertrand Russell, who at the moment is creating quite a stir for wanting to ban the use of the H-bomb, points out that enquiry is endless, and quotes Socrates as having recognized that the sum total of what man knows is vanishingly small.

In medicine we are now recognizing this fact, for the discovery of every new function of the body turns up two or more functions requiring elucidation. This emphasis on function is an admirable one for we are coming to recognize the liver, for example, as a busy factory, a dynamic thing, rather than as a series of still-life pictures captured by one or other of the microscopes.

Even here we incorrectly consider biochemistry as something dynamic, for although the biochemical scene does change from moment to moment, the actual process whereby this process occurs, in terms of the movement of electrons, protons, and so on, is a biophysical one. In fact the dichotomy between biophysics and biochemistry is an artificial one which will ultimately disappear.

Another old dichotomy which complicates man's thoughts and enquiries is the dichotomy between body and soul, or mind. In fact what we term 'the mind' represents the biophysical workings of our biochemical selves.

The deoxyribonucleic acid which is the basic functional unit, as far as we are biochemically constituted, is subjected to a certain amount of permutation and combination, when we come to the process of mitosis. This means that in the process of cell reproduction, nothing can be completely predetermined, and that from the stuff of the DNA will inevitably spring man's infinite variety.

This does not of course exclude the possibility of hereditary influences, and in fact, genetically speaking, man is immortal. Dominant and recessive genes help to decide on whether an individual is going to be a Churchill or a Gandhi. On the other hand eugenicists are desirous of achieving some control over the genes which may contribute to the birth of a Caesar Borgia.

While control of genetic inheritance is something which will enable us to shape the characters of the future, we are here more concerned in arranging the stage upon which they play their parts.

It is now perhaps time that we returned to the conglomeration of deoxyribonucleic acid, who is still waiting in our consulting room chair, and whom we have termed an inadequate individual. He is considered to be a finished product of our civilization and in fact is finished in more ways than one.

What has happened since he forsook intra-uterine life is that he has been buffeted, cajoled, persuaded, and contradicted, by a series of opinions based on systems of thought which have been formulated over the ages. Parents, doctors, teachers, lecturers and even politicians, who are the least qualified to express opinions, are among the host of individuals who impress their particular view upon our bewildered subject. The end result is that he is liable to contemplate matter and form with the eyes of Aristotle, or think of atomic science as it was propounded by Democritus.

He may find himself influenced by a government which in its insistence on divine rights shows much of the influence of the scholasticism of the Middle Ages, while in secular matters, it emphasizes that the whole is much more important than its parts, thus demonstrating the influence of the philosopher, Hegel who, curiously enough, also inspired Karl Marx.

If he is a doctor, in apparently any country in the world, he may seek a noble philosophy in his Medical Association, only to find little more than a utilitarianism. He finds in fact that he has joined a trade union. While leading industrialists or farmers may publicly challenge a responsible minister to do constructive things on a grand scale, the doctor's Medical Association concerns itself essentially with the economics of medical practice, as applied to the doctor and his patients.

Such public pronouncements as have to do, e.g. with gross shortages of beds or doctors, or other such matters concerning the prime welfare of the public, are left to governmental executives, who are accustomed to work on the principles of 'too little and too late'.

Such attitudes naturally inspire the public and the press to consider the doctor's outlook a mercenary one, and this ends up with the professional body being classified and dealt with like any other trade.

This reference to the material outlook of the responsible body concerned may appear to be a diversion from my main theme, but it does demonstrate a pragmatic viewpoint which disregards some of the deeper issues which ought to concern us. The whole question of issues and values is a little confused at the moment, for there is something of a revolution occurring in the name of human freedom, but modern science has developed a new set of rules and standards, which, properly applied, would establish the norms for a sane cultural milieu.

Earlier I pointed out that the suggestion that Darwinian principles could be applied to the evolution of thought was fallacious. In fact, as Julian Huxley has pointed out, man has developed a new method of evolution. This is the transmission of organized experience by way of tradition, which supplements and largely overrides the automatic process of natural selection as the agency of change in the human phase.

Nevertheless, man is culpable in the abuse of this newly-found evolutionary potential, for he willfully perpetuates approaches to reality which can only confuse the individual who uses them. In particular there are all the dichotomies. Matter and form, being and not being, and body and soul are good examples. Or there are arguments such as idealism or realism concerning the approach to reality. Einstein's $E=mc^2$ indicated the unity of nature, which has been so well substantiated by modern atomic science.

In medicine we are recognizing more and more the indivisibility of structure and function, and yet the moment we consider the contents of the cranium, we slide back into the bad old dichotomies. The neurophysiologists have not yet explained how conceptual thought is a biophysical phenomenon, and yet they must surely accept this as the correct working principle.

At this point our friends the metaphysicians, who dearly love their dichotomies, are liable to condemn this principle as materialistic. Although they may be correct, the concept of functioning ticking DNA seems to be a perfectly reasonable one. At least it avoids what seems to be an unnecessary dualism.

The monism, which is the alternative, suggests that all living matter is capable of developing what we call a 'mind', and that in fact 'mind' is a universal attribute of such stuff. This would seem to be possible depending upon how the basic material is arranged. It may be constituted to resemble equipment considerably better and more profound than an electronic brain,

or may add up to something like a wheelbarrow, which has to be pushed to make it work.

Such a possibility would imply that mind is a far more tangible thing than it is at present imagined to be. At least it refutes and condemns the hopeless proposition that the soul or mind is a nebulous entity, loosely attached to the body, which must, regardless of our constructive endeavours, go its pre-ordained way. At the same time, before we allocate too much precision to this concept, we must remember that modern science works on the law of predictable chance.

While this may mean that we cannot arrive at a final answer (which is perhaps fortunate) it still guarantees a high degree of predictability. This is important for it means that if we interpret our basic premises correctly, scientific logic will develop the working answer for us.

In this context it was interesting to hear Dr. J. Ellis, of London, at the recent Durban conference on medical education, put forward the suggestion that perhaps we ought to educate two types of doctors.

His type II doctor was an individual who would be fed with information, computer-wise, in a restricted field of medicine, which would allow him to perform efficiently in that field. Medical specialists could be rapidly educated by, as he put it, programming their minds, and, he points out, most of our minds were programmed by dedicated, efficient, authoritarian, doctors.

His type I doctor was the individual who would add to the knowledge of type II doctors, the power of scientific reasoning. This, he points out, does not imply the addition of a lot of scientific facts and data, but merely the power of logical reasoning. He adds, significantly, that 'the doctor's basic knowledge must consist of the closest familiarity with that indivisible unity of mind and body, which constitutes a human body'. Dr. Ellis' proposition is also extended, by implication, to the development of the layman's mind.

This is an eminently sane approach to what sometimes looks like an insuperable problem: i.e. how to deal with the mass of

scientific facts and data which are accumulating as man increases the breadth of his knowledge.

What a pity then it is that while we have in our power to control man's approach to reality, the bottle of tranquilizers is so often necessary to enable the individual to cope with the environment for which we can be considered responsible.

This is, of course, in the main due to our bad arrangement of this environment.

We have achieved a remarkable degree of control over nature, and if we could comprehend it in terms of simple rules, could exert far more control over nurture too. These rules are those of modern science, which seeks the truth, and we acknowledge them when we read our medical journals and recognize the exciting new truths which enlarge the perimeter of our knowledge.

Here too we note the conceptual unity which is necessary to make a new truth click into place, and cannot fail to be impressed with the simplicity and common sense which characterizes the modern approach to reality. It is this approach which I wish to emphasize in this address.

I started with an apology that my views were not original. I am adding a small voice to a powerful chorus of far more competent individuals, who see chaos and darkness threatening when new light is available. To accept this fact means that man must understand that he is responsible for his own fate, but the new comprehensions of the truth are there for all to see, and the prospects are exciting.

We have the means to work towards a happy ending.

Let us heed the words of Winston Churchill when he said 'Give us the tools and we will finish the job'.

BIBLIOGRAPHY

- Bronowski, J. (1960): *The Common Sense of Science*. London: Pelican Books.
 Ellis, J. R. (1965): *Medical Education in South Africa*. Pietermaritzburg: Natal University Press.
 Huxley, J. (1965): *Evolution in Action*. London: Pelican Books.
 Russell, B. (1959): *Wisdom of the West*. London: Macdonald.