SCIENTIFIC MEDICINE AND QUACKERY*

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In my short address I shall very briefly refer to the evolution of modern medicine, mention a few of its important events and developments, emphasize the high standard of medical education and the strict control of legitimate medical practice, and direct attention to the astounding and rather humiliating fact that in a country like the Republic of South Africa, which can boast of a considerable degree of enlightenment, quackery still exists and even flourishes, and the sale of secret remedies is enormous.

Primitive Medicine

The history of primitive medicine is also the history of human fallibility and error. The history of the advancement of medical science, however, is the history of the discovery of important fundamental principles leading to new views on disease, the invention of new instruments, procedures and devices, and to the formulation of public hygiene laws, all converging towards the great ideal of preventive and social medicine; and this was accomplished by the arduous labour of devoted workers in science.

Dr. Robertson

Ignorance and lack of enlightenment are the causes of fanaticism and superstition. As the ancient Greeks hung upon the teachings of Empedocles and Hippocrates, as modern humanity responded to the ideas of Jenner, Pasteur and Lister, so there has been at no time a greater interest in the advancement of medicine and public health as manifested in periodicals and newspapers than in our own. The awakening of the people to looking after their own interests as regards health is no doubt the hope of preventive medicine of the future. Yet even under the best conditions it is strange that intelligent and educated persons will continue to hug their whims and superstitions, consult quacks and be amenable to unscientific and unproved methods of so-called treatment.

Primitive medicine was based mainly on magic and superstition and progress was slow.

European Medicine

The advancement of European medical centres is symbolized in the figure of Hippocrates (460 - 370 B.C.) who gave Greek medicine its scientific, spiritual and ethical ideals. Hippocrates lived at a time when Athenian democracy had attained its highest point of development. Hippocrates dissociated medicine from magic and philosophy and gave physicians the highest moral inspiration. To him medicine owes the art of clinical† inspection and observation. He virtually founded the bedside method. It is the method of Hippocrates, the use of mind and senses as diagnostic instruments and his elevated conception of the dignity of the physician's calling that made him by common consent the 'Father of medicine' and the greatest of all physicians.

The greatest Greek physician after Hippocrates was Galen (131 - 201 A.D.), the founder of experimental physiology. Galen was the most voluminous of all ancient writers and the greatest of the theorists and sytematists. His works are a gigantic encyclopaedia of the knowledge of his time including books on anatomy, physiology, pathology, therapeutics, practice of medicine and pharmacy. He gave us the four classic symptoms of inflammation, he differentiated pneumonia from pleurisy, was the first to mention aneurysm and described the different forms of phthisis, mentioning its infectious nature and proposing a full milk diet and climatotherapy for this disease.

Andreas Vesalius (1514 - 64) was the most commanding figure in European Medicine after Galen and before William Harvey. There were plenty of dissectors and dissections before Vesalius; but he alone made anatomy what it is today — a living, working science.

The seventeenth century, the age of Shakespeare, Milton, Rembrandt, Bach, Molière, Newton and Bacon, was pre-eminently a period of intense individualism, intellectual and spiritual.

The greatest name in seventeenth century medicine is that of William Harvey (1578 - 1657) who studied at Padua and whose work has exerted a profounder influence upon modern medicine than that of any man save Vesalius. Harvey's discovery of the circulation of the blood was itself a momentous event in medical history. In his demon-

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†Greek: Kline=bed; Clinical=bedside.

stration of the circulation, Harvey was, however, brought to a standstill at one point only, *viz.* the capillary anastomosis between arteries and veins, which, having no microscope, he could not see.

The greatest of the early microscopists was Marcello Malpighi (1628 - 94) the founder of histology. He demonstrated the capillary anastomosis between arteries and veins. Harvey had made its existence a logical necessity; Malpighi made it a histological certainty.

In the seventeenth century devouring famine, plague and war (those primal causes of human misery) were everywhere rampant. Bubonic plague struck with terrific force in many places. Typhus, typhoid fever, scurvy and smallpox were rife. Infant mortality was high.

Towards the end of the eighteenth century came one of the greatest triumphs in the history of medicine: the successful introduction of preventive inoculation by Edward Jenner when he performed his first successful vaccination in 1796 against smallpox.

Joseph Lister (1867) introduced antiseptic principles in the practice of surgery.

The founders of bacteriology were Louis Pasteur and Robert Koch; Pasteur being also the pioneer of the modern theory of prevention against disease, while to Koch we owe the development of the correct theory of specific infectious diseases.

Pasteur in 1881 succeeded in producing a vaccine against anthrax, and in 1885 applied vaccinations against hydrophobia.

Robert Koch worked out the life history and sporulation of the anthrax bacillus in 1876 and in 1882 discovered the tubercle bacillus.

Almroth Wright made typhoid vaccination practicable in 1896.

Ronald Ross located the Anopheles mosquito as the vector of malarial fever in 1897.

Through the early studies of Ingram and de Meillon of the South African Institute of Medical Research, Park-Ross, Annecke and Hamilton of the Department of Health, two species of anopheline mosquitoes were incriminated as the principal vectors of malaria in Southern Africa. Further studies defined their habits. This information was the basis for the extensive campaign undertaken by the State Health Department which resulted in the virtual elimination of malaria from South Africa and made possible the agricultural development of extensive areas which are now the richest in the land.

Walter Reed and his associates proved in 1901 that the cause of yellow fever was transmitted to man by a particular species of mosquito, the *Stegomyia fasciata*. Shortly after this discovery William Gorgas screened yellow fever patients and destroyed mosquitoes, and in 3 months Havana was freed of yellow fever. In connection with the construction of the Panama Canal, Gorgas, ably assisted by A. J. Orenstein, freed that part of the isthmus, not only from yellow fever, but also from all dangerous infections. Through this great triumph in sanitation, Panama became one of the healthiest communities in existence.

X-rays, discovered by William Conrad Roentgen in 1895, have become a most valuable and reliable aid in diagnosis, and in the hand of experts a very useful therapeutic agent.

The Curies isolated radium chloride in 1898 while Henri Dominici, between 1906 and 1919, developed radium therapy.

There have been profound advances in radiation therapy in recent times, and supervoltage radiotherapy is rapidly supplementing the conventional forms of radiation therapy.

The great irrigation schemes in South Africa have favoured the proliferation of bilharzia snails and the propagation of the disease. Bilharzia now looms large as one of the formidable problems to be solved. In studies carried out many years ago by Dr. Jannie Becker and Dr. Annie Porter, the snail intermediate hosts were identified and their distribution clearly defined. The South African Institute for Medical Research, in collaboration with the Bilharzia Research Unit of the Council for Scientific and Industrial Research, is studying the problem which it is hoped will eventually lead to its control.

Studies of rodent reservoirs and their fleas have facilitated measures for the control of plague.

The study of relapsing fever, a disease transmitted by the human tampon tick, which once caused much debilitating illness among farm labourers in the Northern and Eastern Transvaal and in mine labourers in the North West Cape, has led to the development of methods for its eradication.

Frederick Banting and Charles Best, after years of dedicated research, published their findings in 1921 on insulin, which revolutionized the treatment of diabetes.

Alexander Fleming commenced his investigations in 1928 at St. Mary's Hospital, London, resulting ultimately in the production of penicillin in 1941. This ushered in antibiotic therapy which has proved to be of immense benefit in the treatment of a variety of serious conditions and diseases.

For many years intensive studies have been carried out in connection with the dread and crippling disease of poliomyelitis. The development of effective vaccines against the disease is an epic of individual research effort, unstinted dissemination of knowledge, and cooperative effort at the national and international level. The establishment of the Poliomyelitis Research Foundation in Johannesburg is an example of the great role played in the successful attack on poliomyelitis on a national scale in South Africa, resulting in an excellent degree of control over a serious communicable disease. It raises the hope that the substitution of the word 'eradication' for 'control' is well within the limits of possibility.

The influence of medicine upon human progress has been profound.

René Descartes, the great natural philosopher, observed (1637) that it is to the science and art of medicine that the human race must look if it is to perfect and fit itself for the gigantic social tasks and problems which are bound up with its future development.

The conquest of communicable diseases; the attainment of painless, shockless surgery; the manifold devices of sanitation; the recognition of and interrelation between health and disease and social economic conditions; the widespread concern about industrial poisoning, trade and occupational diseases, and accidents; the movement for wholesale destruction of noxious insects, parasites and

vermin; the relation of the neuroses and sexual psychosis to crime; and the relation of the internal secretions to the neuroses and insanities represent a few of the trends of medicine. The influence of disease itself upon the trend of human history in the past is still an unwritten chapter thrown into striking relief by the triumph of sanitation over infectious diseases.

The earliest hospitals originated under religious orders. Over the centuries great institutions of healing have been established and constructed to meet the needs of the community. The problem of medical care is exceedingly complex. The provisions necessary to meet the needs of medical services include essential facilities such as hospitals, special departments, laboratories and specially trained personnel. Hospitals affiliated to medical schools of universities are highly developed institutions which provide medical care in all specialties, material for teaching purposes, and opportunities for the study of disease. After an intensive medical course which covers a wide field, medical graduates secure a period of practical experience under supervision before assuming the responsibilities of independent practice.

Medical schools of the highest standard have been built up and are included as faculties of the great majority of the best universities throughout the world. Numerous comprehensive medical libraries exist in connection with all medical schools and institutions for medical research. Publications and books of reference relating to medicine abound.

There is no modern science or group of sciences which has so many current periodicals as medicine. There are also a large number of publications of laboratories and clinics, institutions and foundations. It is estimated that today there are at least some 60,000 scientific journals relating to medicine.

One of the most striking features of modern medicine is its internationalism.

The Practice of Medicine in South Africa

The practice of medicine in the Republic of South Africa is regulated and controlled by the Medical, Dental and Pharmacy Act, No. 13 of 1928, as amended.

The recognition of degrees, diplomas and certificates granted after examination by a university, medical school or other examining body, to entitle holders thereof to registration as medical practitioners, is prescribed by Regulation under the Act.

The Medical and Dental Council has considerable disciplinary powers to control medical practice in the Republic.

It has the power to enquire into any complaint, charge or allegation of improper or disgraceful conduct against any medical practitioner registered under the Act, and, on conviction, impose penalties prescribed by the Act.

The South African Medical and Dental Council was established for the protection of the public, and not for the protection of the profession.

The instrument which Parliament set up for the purpose of making the distinction between qualified and unqualified persons is called the Medical Register.

On the Medical Register are placed the names of those who have passed certain tests of professional fitness. These persons are called registered medical practitioners and these alone the law declares to be duly or legally qualified. The Council has to see that the tests of professional fitness actually applied by the examining bodies to aspirants for registration are sufficient, and only holders of degrees or diplomas of universities or examining authorities approved by the Council qualify for registration.

The Council has also to see that no registered person who by crime or misconduct has become unworthy of the legal status which registration confers, shall remain on the register. In other words, the two main functions which the Council in the public interest discharges are, first to prevent the unfit from gaining access to the register, and secondly to remove the unworthy from it.

A code of Rules regarding conduct of which the Medical and Dental Council may take cognisance has been laid down.

In terms of these Rules a registered medical practitioner holding himself out as a specialist, unless he has been recognized as such by the Medical Council and his speciality has been registered, may be charged with a breach of the Ethical Rules.

The performance by medical practitioners, except in emergency, of professional acts for the performance of which they are inadequately trained and insufficiently experienced may expose such practitioners to charges under the Act. Rules have also been promulgated for the registration and control of medical auxiliary personnel and medical technologists.

In the Republic of South Africa the practice of medicine by qualified and registered medical practitioners is strictly controlled by the State.

The standard of medicine in South Africa and of its teaching is rightly regarded as being as high as anywhere in the world. This national asset, which is of inestimable value, must not be imperiled.

All those who wish to practise medicine must be properly trained, must have proper qualifications and must be of the highest integrity.

The decision as to what 'properly qualified' means and the machinery to ensure the maintenance of proper standards of integrity, must remain in the hands of men of unquestionable reputation, qualification and ability, who insist on the application of the 'basic science laws'.

The risk of the spread of disease by modern transport and the illness and injuries which are and can be sustained in present-day living conditions are ever present in the minds of medical men; hence their active support of research work which continues to find more and better ways of combating all human ills, be it by means of drugs, vaccines, surgical methods or other approved treatments. Without these, one wonders what havoc diphtheria, malaria, poliomyelitis, tuberculosis, etc. would be causing. Medical men who devote themselves to research are interested, not only in the medical profession, but also in the public welfare.

If and when they find better methods of helping mankind they give the world the benefit thereof. In sharp contrast it is pertinent to draw attention to the secrecy which surrounds the practice of unscientific and unorthodox cults of healing.

Quackery

The requirements of the public demand that medical standards should not be lowered. There is no room for a register of persons licensed to practise medicine with inferior qualifications. This is all the more so when regard is had to the fact that those who practise the healing arts cater for a public that includes a large proportion of gullible people.

Scientific diagnosis is a preliminary to adequate medical treatment and is beyond the capacity of those practising certain cults of treatments.

The services of quacks and practitioners in cults are not a useful addition to ordinary medical practice and most definitely involve danger to the health of the community.

The practice of medicine by persons without sufficient medical training to entitle their registration as legally qualified medical practitioners is a problem in South Africa.

Under present laws in South Africa any person not registered as a medical practitioner who diagnoses and treats for gain, commits an offence, but in practice it is difficult to obtain a conviction.

Unfortunately unqualified and non-registrable persons carry out forms of medical practice by refraining to claim or suggest that they are registered medical practitioners, and provided that certain restrictions are adhered to, which include the signing of a death certificate or the signing of a prescription for a dangerous or potentially harmful drug, they evade the law.

It is astounding how an unqualified person or quack can have any status in this age in which the practice of the most varied of professions is dependent upon having the required qualifications. It would never occur to us to let just anyone pilot an aeroplane. We would not compromise on the qualifications expected from a train driver or allow just anyone to construct a bridge. Why should there be a difference when it comes to medicine?

Medicine remains an art and the doctor must draw upon his basic scientific knowledge in order to establish the diagnosis, taking into account the complexity of his patient's physical and moral being. The doctor can help his patient within the scope of his knowledge of medicine. The results of his treatment cannot be measured with the same accuracy as a scientific problem. The quack takes advantage of this mathematical uncertainty of medicine, and the public, unaware of his lack of serious basic knowledge of medicine, are unable to detect the problematical character of his so-called results. Moreover, man is by nature inclined to expect a miracle, to be readily enraptured by it, and emotionally prepared for it through advertising.

The quack thrives on the anxious person, the patient suffering from a functional disease and who grows sceptical because medical examinations are constantly negative.

The quack sees chronic patients whose irreversible disease makes them hope against hope and patients whom the doctors regard as incurable, but whose families try even the most absurd treatments, believing the most incompatible claims.

Certain cults have standardized methods of treatments for all diseases. Such procedure is based upon the fundamental fallacy that the human being, who is the unit of medical service, can be regarded as a uniform, standardized organism. The contrary is the case, inasmuch as no two individuals are alike and no two even with the same disorder react in exactly the same way. Sound medical practice requires careful study of the health needs of each individual — physical, mental and social.

Laws Against Unlicensed Medical Practice

Laws against unlicensed medical practice have been enacted in certain countries:

In Australia the practice of medicine by unqualified persons, i.e. those without sufficient medical training to entitle their registration as legally qualified medical practitioners, is reasonably well controlled under the State Medical Practitioners' Act. Unqualified persons are prohibited from advertising their ability to treat bodily ills and are not entitled to sue or recover any charge or remuneration for any medical advice.

In Denmark any person unauthorized to practise medicine, who endeavours to cure the sick, is considered to be a quack. A quack is subject to punishment if it can be proved that his treatment endangered the patient's health or resulted in damage to body or health. The law forbids unqualified persons to treat infectious diseases, perform operations, administer anaesthetics, use X-ray equipment, give radium or electrical treatment or use drugs that a pharmacist may only provide upon receipt of a doctor's prescription.

In France, in spite of the law which authorizes only licensed physicians to diagnose and prescribe medical treatment, unlicensed persons still practise with extensive newspaper advertising.

In the Netherlands, the law regulating the practice of medicine, if applied in the right way, would banish quackery effectively, but its application leaves much to be desired. A society against quackery fights with unabated force every form of quackery.

A new law forbidding medical practice for remuneration by laymen came into force *in Sweden* in 1961. This law rules that a person unlicensed to practise medicine shall be liable to prosecution if his treatment injures the patient or exposes him to the risk of injury. The unlicensed person is not allowed to plead he was unaware of the patient's condition or prognosis. A list of diseases has been established which persons unlicensed to practise medicine are forbidden to treat, such as epidemic diseases reportable to the health authorities, tuberculosis, venereal diseases, cancer, diabetes, epilepsy and diseases connected with pregnancy and delivery, it being made clear that it was not to be misconstrued to imply that the treatment of diseases not listed was permissible. Of special interest is the stipulation that all treatment by unlicensed persons of children under 8 years of age is prohibited. Advice in writing to a patient without personal examination is prohibited, thus stopping the practice of treatment by correspondence. No unlicensed person is allowed the use of a title that in any way gives the impression that he is a medically trained person or that he is authorized to practise medicine.

Switzerland has legislated against illegal medical practice, and anyone who practises medicine without proper qualifications can be prosecuted.

In the trials of unlicensed practitioners, members of the medical profession are reluctant to act as witnesses and entrust to the Department of Public Health the task of prosecuting them. The medical profession takes no direct part in prosecutions lest the general public may consider this an attempt to support its own interests.

Secret Remedies

The late Sir William Osler is reputed to have said 'The desire to take medicine is perhaps the greatest feature which distinguishes man from animals'.

In South Africa in terms of the Food, Drugs and Disinfectants Act No. 13 of 1929, drugs must conform to the standards specified in the *British Pharmacopoeia,* the British *Pharmaceutical Codex* and the *Therapeutic Substances Regulations* promulgated under the Medical, Dental and Pharmacy Act.

In terms of the Fertilizers, Farm Foods, Seeds and Pest Remedies Act No. 21 of 1917, remedies for cattle, horses, sheep, poultry, etc. must be registered annually and contents disclosed. Labels and all pamphlets and notices advertising the remedies must also be registered. The Department of Agriculture has to be furnished with particulars of experimental evidence in support of claims concerning remedial qualities and if not satisfied with such may reject these applications for registration.

In South Africa large numbers of proprietary and so-called patent medicines of secret composition are extensively advertised and sold direct to the public. These preparations need not conform to any standard.

There are laws controlling the quality of food and regulations governing the use of preservatives, colouring agents and flavouring agents, yet almost any substance can be put in a package or container and can be sold at almost any price to the public as a cure for almost any ailment.

The general public has no means of distinguishing the products of reputable drug manufacturers from much-advertised secret preparations.

A drug of established merit may be of aid when correctly used with due regard to indications, contraindications, toxicity and dosage, but under other conditions it may be useless and even harmful, if not at once, very likely after continued administration. Drugs should only be used after a proper diagnosis of the ailment for which they are prescribed.

Dangerous drugs are under strict control in this country, but a large number of remedies of secret composition are sold direct to the public.

The activities of qualified and registered medical practitioners are controlled by the South African Medical and Dental Council. Registered medical practitioners are prohibited from using in the conduct of medical practice any form of treatment, apparatus or process which is secret, or any apparatus which proves upon investigation to be incapable of fulfilling the claims made in regard to it.

The Newspaper Union of South Africa and the Proprietary Association of South Africa have voluntarily adopted a code of standards for advertisements of medicines and treatments. This code is not, however, recognized by publishers and manufacturers not associated with these two bodies. There is no restriction of propaganda contained in leaflets and pamphlets issued with secret remedies or hand-outs in regard to certain forms of treatment.

The harm that arises from the advertisement and sale of secret remedies includes the following:

(*i*) Self-medication may cause considerable delay in seeking professional advice, obtaining a correct diagnosis of the patient's condition and in obtaining scientific treatment. Diseases which might be cured in their early stages may be allowed to become advanced.

This is particularly so in the case of cancer.

(*ii*) There is the danger of the spread of disease by people who may think they have cured themselves.

(*iii*) There is a possibility of habituation, addiction and accidental poisoning.

(*iv*) Considerable sums of money are often spent on secret remedies which could have been better applied to securing scientific diagnosis and treatment.

(*v*) Some of the so-called remedies are liable to cause harmful effects on certain individuals.

Several countries have enacted laws to control the advertisement and sale of secret remedies for which claims are made in regard to efficacy in the treatment of bodily ills, some of which may be of a serious nature.

In South Africa there is at present no legislation to control the advertisement and sale of secret remedies.

Realizing that there was a strong case for such legislation, the Minister of Public Health in 1935 appointed a committee under the chairmanship of the late Dr. A. J. Stals to enquire into the question of legislation with a view to effective prevention or restriction of the publication of misleading or fraudulent advertisements or statements intended to promote the sale of medicines and medicinal preparations and appliances. This committee investigated the question very fully and published an illuminating and interesting report. 'The Proprietary Medicine and Appliances Bill to regulate the advertising, manufacture and sale of proprietary medicines and appliances, and for regulating the advertising by unqualified persons claiming to treat and cure disease of man', was drafted. This Draft Bill was sent to a 'select committee', but the amended Bill has never been considered by Parliament.

The case for legislation on these matters is indeed a strong one and the Authorities should at least bring South Africa in line with development in other countries.

The Commission of Enquiry into the High Cost of Medical Services and Medicines, whose report became available in 1962, has recommended the appointment of an Advisory Board of Control for Drugs. This Board would also give expert advice on the use of new drugs which should only be available after approval.

The Commission also recommended that the pharmaceutical industry be compelled by law to display the generic name as the main name of a product before marketing, in advertising literature and on containers. Most reputable drug companies do this. Its main effect would be on proprietary remedies. The Commission urged the enaction of a Bill as soon as possible to control medicines for human use.

Medical science is the basis of medical practice. It is universal. It is accepted and contributed to by every civilized country in the world. All medical knowledge is

shared. It does not stand still. Medical knowledge is extending every year.

There is no secrecy in the practice of medicine. Numerous journals covering every branch of medicine are published throughout the world and are easily available for anyone interested. Medical conferences, both local and international, are held in many countries, and afford opportunities of presentation of investigations and discussions of medical problems. Research is proceeding relentlessly in every field of medicine.

The scientific aspect of medicine is constantly being improved.

The technique employed by persons unlicensed to practise medicine seems to have a particular appeal to persons of inadequate personality: the neurotics and early psychotics, the ignorant and the large number of credulous people in the community.

I believe that an effective way in which the medical profession can combat the inroads of charlatanism in the community is to strive for the highest ethical standards in medical practice, which is the line of policy being actively pursued by the Medical Association of South Africa.

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