A Decade of Public Health

E. H. CLUVER.*

The main developments in public health in South Africa during the past ten years may be summarized as:—

(i) An increased health-mindedness among the general population, not excluding the medical profession;

(ii) a changing outlook on hygiene; and

(iii) an increase of health machinery.

The health-mindedness shows itself in an increasing interest in problems of nutrition, a realisation that a malnourished population, black or white, produces bad labour and citizenship and is, therefore, economically unsound; a rapidly developing interest in physical education with leagues of the fit, and similar organisations springing up all round; slum elimination schemes have been adopted by all the larger municipalities; health surveys are being demanded in and out of Parliament; and at long last has come a demand for obtaining health information in the form of vital statistics of our Native population.

The change in outlook is significant. Ten years ago public health in South Africa, as in many other countries, was still largely an affair of "buckets." Text books on the subject devoted their largest sections to nightsoil disposal and sewerage schemes. Nowadays the laying on of wholesome water supplies, and the construction of drainage and sewerage systems are being more and more left to the engineer. It is generally assumed that the hygienic principles underlying these matters have been fully established and understood by the engineer; that being so, the medico may be relieved of the study of intricate engineering technicalities. That it is unwise for the hygienist to drop all interest in these matters will be seen later. Apart from refuse disposal the other great function of public health organisations in the past was guarding against epidemics. A public health department was looked upon as a defence force to be called out only in the face of an epidemic rather than an organisation for promoting health and fitness at all times.

*This article is the third of our "Guest Series," kindly written for us by Dr. E. H. Cluver, M.A., M.D., D.P.H. As professor of physiology he was closely associated with our school during its early history. He is still with us as lecturer in Public Health, but he devotes most of his time now to wider issues in his capacity as Assistant Health Officer for the Union and Director of Medical Services for the Union Defence Department.

The improving health machinery shows itself in many forms. Very slowly the idea of prevention is permeating the medical course at our two universities. This subtle change becomes increasingly evident in the recent graduate. This means that our doctors of the future will become steadily better fitted for the campaign of fitness, the raising of healthy citizens as opposed to patching them up when they have succumbed to preventable neglect. Other improvements in our health machinery are the steadily increasing numbers of hygienic appointments, medical and lay, by the central government, the provincial administrations and local authorities. This has brought with it an increased demand for training. Larger numbers of students are attending the diploma in public health courses, and the numbers attending sanitary inspector courses threaten to get out of control.

NUTRITION.

The supreme importance of nutrition in ensuring freedom from disease has come to be appreciated not only by the medical profession, but also by the general public. Until recently dietetics entered very little into the medical curriculum, and graduates left the university with very scant knowledge of the subject. Now doctors are being educated in spite of themselves. Advertisements regarding vitamin-rich substances flood their mails. They must study to protect themselves from patients possibly better informed on the subject.

During the first decade after the Great War European countries adopted various desperate measures to combat the impoverishment which resulted from that international disaster. Some of these measures had the unfortunate result of increasing the ill-health associated with poverty. I refer more particularly to the tariff walls which were erected against the importation of foreign agricultural products. In South Africa agriculture was languishing; the tariff walls which were already strongly built were strengthened. A further measure aimed at assisting agriculture, but which had the unfortunate effect of promoting ill-health of the Union population, was the subsidising of export of essential foods.

These measures suggested that the interests of agriculture and hygiene were conflicting; that agriculture could only be brought into a strong

position by temporarily ignoring the requirements of hygiene. During the following decade, the one with which we are now concerned, ideas were revolutionized. Agriculture suddenly discovered that hygiene was his best friend. He went even further in his devotion. Mr. Bruce, the Australian delegate at the Assembly of the League of Nations, announced that the marrying of agriculture and public health was necessary in the interests of the latter. Though public health is undoubtedly benefitting and will continue to benefit greatly from this union, honesty compels us to admit that agriculture would not have come so happily to the wedding but for the fact that it foresaw great financial advantages accruing to itself.

The agricultural products which are essential to the public health of a community have appropriately been named protective foods by the Health Organisation of the League of Nations. They consist of dairy products, eggs, fruit, vegetables and meat, *i.e.* the substances rich in vitamins and minerals. Governments were actually paying farmers to export these foods, and the persons who suffered most in health from this policy were very often farmers and their families ! Those farmers who did not produce these substances themselves were unable to afford them.

The changed attitude has sprung from the realisation that it is possible to assist a deserving agricultural industry equally satisfactorily by promoting the sale of the protective foods he produces in his own country. Assisting the local consumer to purchase these foods very effectually aids the farmer. It took some time for this changed attitude to show its effects in South Africa. It was not until 1935 that the state-aided milk and butter scheme was inaugurated. Viewed from the public health aspect, it is a minute gesture, as only a very small section of the undernourished population of the Union is affected by it. European, Coloured and Indian school children only are allowed to participate in the scheme. Dairy farmers would have to increase their activities very greatly if it were decided that the health of the Bantu children also needed improving.

Nevertheless, it is a measure which hygienists must welcome with open arms, because it means the realisation by agriculture that promotion of local health is in its own financial interest. It is, therefore, likely to develop rapidly. During the first two years of its existence a total of half-a-million pounds was voted by the State for the scheme. Milk is supplied to children in primary schools, to pre-school children and to some extent to indigent children in secondary schools. In regions where milk is not locally produced or not obtainable at a reasonable price, cheese is supplied to the same groups of children. Further, under the scheme butter is issued to approved charitable institutions and organisations at the greatly reduced price of 6d., 5d. and 4d. per pound respectively for the first, second and third grade article. Each member of a family approved under the scheme is allowed a weekly ration of half-a-pound of butter, with a maximum of four pounds for any one family per week. In addition to charitable institutions, butter rations are also being supplied direct to certain families. These consist of families whose combined income does not exceed 6/- per day, and families of three or more persons whose combined income does not exceed 8/- per day. The Railway Administration has also come into the scheme and last year contributed £25,000 for subsidising the sale of state-aided butter to European railway labourers. This has made it possible for the labourer who has to support a family to participate in the scheme provided the combined income of all the members of the family does not exceed 8/6 per day. Last year there were already some 250 institutions and 40,000 persons in receipt of state-aided butter under the scheme.

I have described this scheme in detail because of its very great public health significance. Viewing the dietetic needs of the population as a whole it is indeed almost insignificant. It leaves untouched the great majority of the indigent population, the Bantu. These people continue to degenerate physically as indicated by the increasing incidence of tuberculosis and the difficulty of recruiting sufficient fit labour for our mines from our own Native territories. Nevertheless, the tide has turned. Our farmers will long require assistance. As the national value of health becomes increasingly appreciated, this assistance is more and more likely to be given, not at the expense of the health of the population of South Africa, but in a form which will promote that health. We have a vast market for the sale of protective foods in South Africa. If adequate supplies are to be provided for all, the production of milk, fruit, vegetables and meat will have to be increased out of all proportion to their present amounts. Farming in these branches will become extremely prosperous, as it has done in those European states to whom full realisation of health requirements has already come. The indirect value of such a policy is immeasurable. The value to a State of a population of fit citizens cannot be assessed in figures. The economic value of recruiting the maximum of Native labour from our own reserves need not be stressed.

PHYSICAL EDUCATION.

A realisation of the need for physical education of the people has come late. Ten years ago few health departments either of central governments or local authorities included any such education in their programmes of work. About that time, however, certain countries on the continent of Europe awoke to the necessity of increased muscular fitness not only for purposes of national defence but also for improved citizenship—post-war national poverty had made it imperative for each citizen to render the maximum contribution of service to the state. Scandinavian countries had long appreciated the citizenship-value of a physically fit population and had developed far in physical culture. Germany started in with a rush and has developed in a phenomenal manner in this direction. Other European countries followed suit—Britain one of the last.

Britain had been to a considerable extent satisfied with the "playing-fields-of-Eton" idea, forgetting that the proud tradition of sport was hardly touching the rank and file of the population. This fact had already been brought home to her during recruitment for the last war. Though starting in late, she now bids fair to overtake the continental countries in the matter of physical education. Fifty years ago only £80,000 was sanctioned in one year by local authorities in Great Britain for the provision of playing fields. By 1920 the figure had increased sixfold to £477,000. In 1936 it was over three million pounds. This figure will be vastly increased under the Physical Training and Recreation Act which greatly enhances the powers of local authorities.

In South Africa the great bulk of the population is still deprived of sufficient physical recreation for the attainment of perfect health. Our sports fields attract only those who are already in a physically fit condition. In any case the number of these fields and other facilities which are available can provide for only a very small proportion of the population. When we consider physical recreation from the public health standpoint, we are concerned not with the comparatively small group of athletes who will keep themselves fit in any case, but with the large bulk of the population whose only interest in sport, if any, is as spectators. It is for this very large section that physical education must be provided, and it is the necessity for the provision of such education that we in South Africa have during recent years become increasingly alive.

Medical men are somewhat tardily awaking to this national demand. This is to be deplored, because it is essential, if this movement is to be of real benefit to the health of the community, that it be based on sound medical principles. The lower strata of society who do not play tennis, golf, football or other games are only too frequently in a physiological condition where sudden indulgence in violent exertion may do positive damage. One need only think of the large numbers of Natives who arrive on the mines in a subscorbutic state and who would develop gross scurvy, as experience has shown, if they were immediately put on to hard underground work. Similarly large sections of the European population are malnourished and not in a condition to benefit from physical culture schemes. Medical examination prior to commencement of physical culture courses is essential. The nature of the training also needs careful medical guidance.

Fortunately the necessity for a foundation of medical science is being realised. The courses being provided for physical culture instructors include teaching in anatomy and physiology. Nevertheless caution is necessary. The movement is being sponsored by education authorities rather than health authorities, a condition of affairs which is fraught with danger. It is interesting, however, to note that certain municipal health departments have appointed physical training instructors. This is very satisfactory. They should be looked upon as officers of a health department, and their work should always be supervised by a competent medical man.

The movement has become national. In August, 1937, a committee appointed by the Cabinet met in Bloemfontein to formulate a national scheme for physical education. This committee consisted of the Secretaries for Education, Public Health and Defence. Views were sought from all interested parties. For that reason the heads of the four provincial education departments were invited to attend. Other bodies represented were the South African Olympic and British Empire Games Association, the League of the Fit and the South African Association of Trained Educational Gymnasts. The report of this committee has not yet been published, and it is not possible to forecast to what extent its recommendations will be implemented. But the mere fact of the appointment of such a committee indicates clearly the trend of public opinion. Physical education as part of the public health programme of the country has come to stay.

SLUM ELIMINATION.

The active measures now being taken in all our larger towns for elimination of slums and rehousing of the displaced populations are the

result also of the greatly increased health-mindedness of the general public. The Housing Act dates back to 1920; it has been three times amended, in 1925, 1934 and 1937. Its object was to provide loans of public moneys to construct dwellings, and to empower local authorities to borrow from provincial administrators for lending to individuals and companies for the building of dwellings. Loans were made available at sub-economic rates of interest, it being a condition governing the granting of sub-economic loans that the local authority concerned bear a loss on the scheme equal to the loss to the Government in advancing the money at the sub-economic rate. The rate of interest charged on such schemes was at first 3 per cent. It was reduced in 1934 to 2 per cent.; in 1936 it was further reduced to the very low figure of ¾ per cent.

Until 1933 these sub-economic loans were available only for providing housing for the very poor among the European and Coloured population. Since then the Central Housing Board of the Union Health Department has had wider discretion, and is allowed to recommend the financing of Native location schemes out of sub-economic loans.

The Housing Act had, however, comparatively little effect on the slum population of our cities until the passing in 1934 of the Slums Act. This Act requires the local authorities of the larger towns of the Union to take all reasonably practicable measures for preventing nuisances and ensuring the provision of suitable housing; greatly increased powers are conferred on local authorities for dealing with nuisances without the intervention of the magistrate; wide discretion is allowed the local authority in declaring insanitary premises or an unhealthy area to be a slum; power is given the local authority to acquire not only the land on which the slum property is situated, but also the adjoining and surrounding land if necessary for providing a suitable cleared area. For such acquisition of land loan funds under the Housing Act may be utilized.

Perhaps because of the fact that the demand for slum elimination came primarily from an increased health-mindedness of the general public a dangerous idea arose that medical authorities were not particularly necessary for supervising the campaign. The Continuation Committee of the Poor White Conference suggested that slum elimination and rehousing should be a function of the new state department of social welfare which was created last year. This suggestion was vigorously opposed by the Secretary for Public Health. He pointed out that in no other country in the world had it ever been seriously suggested by a responsible body that such functions should be divorced from public health administration. The health officers of local authorities in the Union are required to administer the Act locally. Slum eradication is intimately bound up with many other health problems such as the reduction of infant mortality and tuberculosis incidence. The Union Public Health Act places housing conditions as of fundamental importance in the protection of the health of the people. Under it the Health Ministry is specifically charged with the duty of collecting information in regard to overcrowding, and of enquiring into the best methods for dealing with bad or insufficient housing. The Slums Act lays on the local medical officer of health the initiation of remedial measures. He must report to the local authority that a nuisance exists, whereupon that body is compelled to take the action required by law. The Central Housing Board advises the Minister, the Provincial Administrator and local authorities. It is correctly located within the Department of Public Health where it has access to the very necessary reports in the possession of that Department.

HEALTH SURVEYS.

There has been a general demand for social and health surveys during the period we are reviewing. These have been carried out by various organisations—official and semi-official. One of the most notable of these was conducted during the early part of the decade under the auspices of the Carnegie Corporation of New York which in 1928 made available the sum of £2,000 for the purpose of financing a comprehensive research into the causation of European indigency in South Africa. It was estimated that there were then more than 120,000 poor whites, *i.e.* Europeans who had sunk below the economic level of the more advanced Natives. One of the most striking matters emerging from this enquiry was the gross degree of malnutrition existing among the so-called poor white section of the population. This finding has been confirmed by subsequent commissions of enquiry, conducted by churches and the State, into social conditions. Tangible expression has been given to the European reaction to the deplorable conditions demonstrated, by the creation of a new department of state—that of Social Welfare.

Malnutrition has come to be appreciated as the root of much evil, hygienic and social. The matter was brought to the notice of Parliament in February, 1937, in a motion by Mrs. Malherbe

who urged the institution of a nutrition survey. The recommendation was accepted by the Government and the necessary expenditure was approved by the Treasury. The survey was commenced at the end of 1937, and will be continued throughout the present year. It is hoped to examine some 150,000 European and Coloured school children and a large number of Bantu children. All of these will be weighed and measured and enquiries made into the nature and amount of food consumed by them.

A tuberculosis survey commenced in a Transkeian district last year revealed an alarming state of affairs suggesting that conditions had changed very considerably since the survey carried out during 1928 and 1929 by the Tuberculosis Research Committee established by the Transvaal Chamber of Mines. The present survey is being extended to half a dozen other Native districts during the year 1938.

BANTU VITAL STATISTICS.

With monotonous regularity the Union Health Department and other health authorities have urged the necessity of vital statistical information regarding the Bantu population. These demands at long last show signs of bearing fruit. Early in 1937 the Council of Public Health passed the following resolution:—

> "This Council views with concern the lack of vital statistics in so far as the non-European population is concerned, and urges the Minister of the Interior to submit the matter of the great need for the registration of births and deaths of the non-European population to the Statistical Council which advises the Minister on all matters relating to statistics."

As the result of this resolution an inter-departmental committee was appointed consisting of representatives of the Departments of Public Health, Justice, Native Affairs and the Interior. This committee investigated the best method of introducing a system of births and deaths registration among the Bantu population in rural areas. It has presented a unanimous report, and it is sincerely to be hoped that effect will be given to its recommendations in the very near future. Until the necessary machinery is set up we must continue to remain in ignorance of the most important health data, namely, that affecting the largest and socially lowest section of the population of the Union. This knowledge is essential if health authorities are to be enabled to make adequate efforts to protect the well-being not only of the non-European but also of the European sections of the population.

THE CHANGING OUTLOOK ON HYGIENE.

The Union Department of Public Health owes its existence to the influenza pandemic of 1918. That major tragedy roused the public of South Africa to the necessity of creating a state organisation ready to deal with a similar emergency should one again arise. This fact indicates that the public of that day thought of a health department essentially as a defence force to be called out in a national emergency. Fortunately the framers of the Public Health Act of 1919 had a wider vision, and the department created by that act is required not only "to prevent or guard against the introduction of infectious disease into the Union from outside" and to promote "the prevention, limitation or suppression of infectious, communicable or preventable diseases," but also "to promote the public health" and "generally to carry out in accordance with directions the powers and duties in relation to the public health" required by law.

During the first decade after the influenza epidemic the fear of a recurrence was still lively in the minds of the public, and devising of epidemic mobilisation schemes was a favourite pastime of many municipal health departments. A further decade has allowed the realisation to take root that the best safeguard against sickness of all kinds is a population made fit by adequate nutrition, recreation and a sanitary environment. The more important aspects of these have already been discussed under the headings "nutrition," "physical education" and "slum elimination."

Our attitude about what is to be regarded as a sanitary environment has been undergoing important changes. Ventilation still means to many persons the removal of excess carbon dioxide, instead of excess body heat. But the number is rapidly decreasing. Even the layman is beginning to realise that draughts are preventive, not causative, of the common cold; and the move towards less clothing is rapidly spreading.

In rural areas the disposal of refuse is still necessary for the crude health reasons of preventing fly breeding and because it usually contains organisms from the intestines of patients or disease carriers. In towns sewerage is demanded for reasons of comfort. But sanitary engineers have been left a little behind. When house drainage was first introduced the belief was current among doctors that bad drains were responsible for diphtheria and sewer gas for typhoid and cholera. The technique of sanitary engineering developed too rapidly for the average doctor to continue capable of taking an intelligent

interest in it. This has proved very unfortunate, because of the necessity of sanitary engineering being guided by medical science. That this has not occurred accounts for the unsightly tangles of pipes on most town buildings in South Africa. Most drainage bylaws in South Africa as in England, still require drain and sewer pipes to pass down the outside of outside walls. Not only that, but drain pipes have to be kept separate from sewer pipes. America long ago abandoned this dual pipe system and allowed these pipes to be built into inside walls. This allows not only of improved architectural design, but saves much money. The considerably greater cost for installing dual pipe drainage has deterred many a householder from installing basins and pans throughout his house. The system far from safeguarding health is proving harmful because it discourages the installation of these highly hygienic fittings.

Ten years ago I drew attention to this unfortunate state of affairs. In the "Journal of the Medical Association of South Africa" of 25th August, 1928, I wrote:—

> "These bylaws in some of our largest and most advanced towns still result in quite unnecessarily hideous and expensive pipes appearing in great profusion on the outer walls of buildings . . . our towns still insist on separate pipes for sewerage and bath and basin slops; and these pipes are invariably required to be placed on the outside of an outside wall of the building. In this matter American practice has kept pace with knowledge. A single pipe placed inside the building and receiving wastes from basins, baths and sinks as well as sewage, is permitted. To prevent the access of foul drain air into the building reliance is placed on efficient trapping and back-venting. Reform in this direction will obviate the unsightly pipe ramifications that now mar many of our buildings."

Reform has come and our more progressive towns, led by Johannesburg, now permit of single-pipe internal drainage systems.

INCREASING HEALTH MACHINERY.

The most obvious development in public health in South Africa during the decade under review is the greatly increased personnel directly engaged in the promotion of public health; the increased number of towns employing full-time medical officers of health holding a registrable diploma in state medicine; the large number of sanitary inspectors and health visitors employed; the clinics for promoting infant and maternal welfare; venereal disease clinics. All these can be numerically stated and make impressive reading.

Of equal if not greater importance is the slowly changing outlook in the medical curriculum. Some teachers are beginning to direct the medical student's attention not only to the pathological picture of the diseased but to the physiological picture which might, with the necessary knowledge and discipline and sometimes with a sufficient wage, have been preserved.

The post-graduate courses in state medicine at the two South African medical schools are steadily attracting more students. In 1932 the Union Department of Public Health took over the direct public health training at the University of the Witwatersrand, with the Secretary for Public Health as Honorary Professor. From then until the end of 1937 a total of 58 doctors have completed the D.P.H. course at that university. The teaching is carried out by a team of lecturers representing the Government, municipal and mining health services, and a very thorough practical training in these various aspects of preventive medicine is given.

In 1928 nine local authorities in the Union employed whole-time medical officers of health; by 1937 this number had increased to seventeen, a desirable result of years of pressure on the Reef towns other than Johannesburg to put their houses in order hygienically. Some of these, as well as some of the original towns, have already appointed assistant medical officers of health. The Union Health Department has during the same period increased the number of whole-time doctors in its employ from 33 to 55.

In 1928 there were 63 local authorities employing certificated sanitary inspectors devoting the whole of their time to sanitary work; in 1937 there were 125, many of them now employing small armies of such officials. These figures are merely quoted to indicate the general trend. The increase in numbers of junior and part-time health officials to staff the greatly increased numbers of health clinics throughout the country is similarly gratifyingly large.

Certain preventive organisations such as that against the spread of tuberculosis have been considerably strengthened. This year most of the new tuberculosis hospital blocks and clinics will be nearing completion. These it must be admitted are not so much the result of an increasing health-mindedness but of an increased demand. In January, 1934, the Council of Public Health passed the following resolution:—

> "This Council views with alarm the incidence of tuberculosis in the Union among Europeans and Coloured people and the unsatisfactory and

inadequate manner in which the problem, except at a few centres, is being dealt with at present as disclosed by the annual report of the Public Health Department. The Council realises that drastic steps are necessary to cope with the present position, and believes that the time is now opportune to enlist the sympathy of local authorities and the public generally with a view to the betterment of the housing conditions of the poorer classes and the provision of more adequate facilities for the care of those suffering from the disease. The Council is satisfied that the aims of the Public Health Department to secure a national scheme for dealing with tuberculosis embracing—

(1) tuberculosis clinics in all the larger centres subsidised under the Public Health Act;

(2) the enlargement of the existing sanatorium so as to serve the whole Union for the care and treatment of early cases; and

(3) the provision for the hospitalisation of advanced cases in each of the four provinces,

are worthy of the earnest consideration of the Government and recommends accordingly."

Acting on this resolution, a nation-wide campaign against the disease was undertaken and the establishment of hospitals and clinics by the Union Health Department and by local authorities is the result.

Certain new organisations, notably that against malaria, have been created. Previous to 1930, measures for combating malaria consisted mainly of a free issue of quinine and of a rather desultory campaign against mosquitoes in general. This campaign was necessarily ineffective because of the sparsely populated areas to be dealt with and the unlimited breeding facilities. In that year Professor N. H. Swellengrebel of the University of Amsterdam, member of the Health Organisation of the League of Nations, investigated the malaria problem in the Union. South African workers had already observed that of the twenty local anophelines only two were regularly found on dissection to be harbouring plasmodia. Professor Swellengrebel confirmed this fact and outlined an effective programme of species sanitation directed solely against *Anopheles costalis* and *Anopheles funestus*. The habits of these two anophelines were carefully studied, and they soon appeared to be clearly defined. Effective antilarval work became practicable because it could be carried out on a much smaller scale than had previously been thought possible. The *costalis* mosquito lays her eggs in muddy pools devoid of vegetation and freely exposed to sunlight, such as collections of rain in road puddles and hoofmarks, and pools in drying up river beds. *Funestus* larvae are very largely confined to the grassy shaded edges of hill streams.

Acting on this information a strong anti-malarial organisation has been built up consisting of medical officers, trained European inspectors, and an army of skilled Native "spotters." This organisation acting in close co-operation with local authorities (some of these specially created to deal with the problem and known as malaria committees) has proved exceedingly effective in the province of Natal. In Northern Transvaal, our other malaria area, special difficulties have prevented an equally effective campaign. Chief among these is the absence of organised local authority control. But the machinery of the Central Government is being greatly strengthened in that region during the present year, and it is hoped that even there the incidence of the disease will be very greatly reduced.

Mosquito research is being actively carried on in Zululand by Dr. de Meillon, of the South African Institute for Medical Research, working in conjunction with the officers of the Union Health Department at Durban. Research into malarial problems is being conducted by Dr. Annecke, of the Union Health Department at the Tzaneen Field Station in Northern Transvaal. The findings of these officers are proving invaluable in perfecting our measures against this very serious enemy of human welfare in South Africa.

In this survey it has been impossible to refer to all advances in the public health campaign in South Africa. A development which may appear unimportant, but which is fraught with the very greatest significance, deserves mention before I conclude. This is the institution of a Native medical aid course at Fort Hare. A four-year course has been established, and the first batch of students will complete their course this year. Thereafter the arrangement is that ten students will complete the course annually. They will be taken into Government service, and will be stationed in kraals in remote parts of the Native territories where the inhabitants at present get virtually no medical, nursing or health services. The medical aid will supply some or all of these, but mainly he will be an agent for promoting health by educating the Natives under his charge in health habits: as I have remarked, a very small but very important beginning.

Enough has, I hope, been said to indicate that there have been very encouraging advances in public health in South Africa during the past decade. But that very much yet remains to be done must also have emerged very clearly.