

Old Diseases and New*

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IT would be impossible to say that any disease has completely died out, and it would be an unwarrantable assumption to say that any disease is a new disease. All the same, it is certain that a number of diseases, which were formerly rife, not to say decimating in their effects in the past, have become obsolete, and it is almost, though not quite, as certain that other diseases have increased considerably during recent times. It is in the sense of the general nature of the problem which diseases present to-day as contrasted with years ago, that I use the words "new" and "old".

Diseases of the heart and blood vessels have taken a prominent position in medicine during recent years. To what degree this is due to an increase in their incidence, or to our improved methods of detecting them, or even to more notice being taken of them now that the more obvious 'villains' have quitted the stage—these are difficult questions to answer. But physicians of two, and still more of one generation ago, were very good observers, both by the bedside and in the autopsy room. So that we have their, and our own, experiences to compare, and on this basis there seems no doubt that diseases affecting the organs of circulation are relatively more rife than formerly.

What is called atheroma, or degeneration in the large arteries, is a very ancient disease. Egyptian mummies, embalmed 2,000 years before Christ, show it. Aneurysms, which are saccular dilata-tions of the big arteries and which were certainly fairly common until fifty years ago, have become comparatively rare. This is because the particular infection which attacks the walls of the vessel is diagnosed much earlier, and is successfully treated. But the more diffuse and less dramatic disease of the arteries which we term arteriosclerosis is very common indeed. This sort of arterial thickening overlaps with other troubles which are partly a result of the loss of elasticity in the vessel wall, and partly compensatory in nature. One of these is arterial hypertension, 'high blood pressure' as it is popularly called. This state of affairs was well known to the physicians of the generations immediately past, who could quite well detect it, even in its early stages, without the help of that instrument of precision by which it may now be exactly measured.

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High blood pressure is not a disease in itself; it is an expression of disease; it is one aspect of that 'rock' or disturbance in the equilibrium by which we have defined disease. It may even, at certain epochs of life, be regarded as physiological. In many cases the increased arterial tension follows, or accompanies, increased nerve tension, the latter being of greater importance in the diagnosis than the former. The older physicians regarded high blood pressure as part of a generalized gouty state. It may well be that, with the great decline in gout in its more classical phases, such as an acute inflammation of the big toe, the same morbid processes—chemical, nervous and infective—are expressing themselves nowadays in the direction of these changes in the circulatory apparatus.

Blood pressures that are below the average are also common. These give the medical man quite as much food for thought as do the high pressures, but they have not, so far, engaged the popular imagination, because the results of them are not dramatic. Perhaps they are the modern equivalent of what used to be called 'poor man's gout'.

Then there is another disease of the blood vessels, and a serious one, which some of us consider to be a comparatively modern disease, and this is a tendency for the small arteries which supply blood to the wall of the heart to become blocked. Our technical term for this is 'coronary thrombosis'. Even when we have allowed for the number of these cases which were formerly included in the category of 'angina pectoris', the incidence of the disease is still, many of us believe, higher than it formerly was. Like all diseases of the circulatory apparatus, it is more common in males than in females. The main causative factors are as yet obscure. Tobacco, and especially cigarette smoking, has been suspected, and there would seem to be something in the life of a medical man which makes him specially prone to this affection.

There is also that curious condition termed 'halt-palsy', in which we postulate a spasm of the arteries in the legs with, in most cases, an early degree of thickening of the vessels. The main symptom is so striking that it is scarcely credible that it would not have attracted the attention of the older physicians had it been as frequent in

the past as it is to-day. The patient is suddenly seized with pain in one or both legs when walking; he halts for a minute or so and the pain ceases; he starts off again and is brought up sharply at about the same distance, stops, and is again relieved.

Nor are our veins exempt from a 'new' disease. Inflammation of a large vein, with the formation of a clot, has been known for a very long time. But it is only during recent years that we have become familiar with a disease in which the inflammation affects a number of the smaller veins, and creeps about from one to another over a period of, it may be, several months. This tendency has given the malady the name 'phlebitis-migrans'.

It is very difficult to say to what extent the work of microbes enters into the production of these troubles in our blood vessels. That it is a factor in some of them seems highly probable. The one thing that seems certain is that the type of germ concerned is not that which 'lays us out', as the expression goes, by a process of acute and lethal infection.

I want to deal with this last point rather more fully, and in connexion with the last of the modern diseases I will mention in which the organs of the circulation are mainly involved. This disease is what we call 'septic endocarditis'. The valves of the heart become the site of colonization of microbes, causing an inflammation which, at some time or other, produces ulceration. When this process has arrived, particles of tissue carrying masses of the microbe are swept off into the blood stream, and get lodged in the network of small vessels in various organs at the periphery of the circulation. In the great majority of cases these microbes are 'streptococci'. A form of blood poisoning is thus set up, to which the patient unfortunately, and despite all we can do, sooner or later succumbs in a very high percentage of cases.

If the germs concerned in this process are virulent germs, such as those which cause acute blood poisoning, or boils, or pneumonia, the disease is fulminant and of short duration—it may be days only. If, however, the germs are not virulent, or, as we express it, only feebly pathogenic, the disease is insidious, slow, and its duration may extend into two or even three years. There is no doubt that the old type of the disease (if I may speak of diseases in types) was generally of the former kind, whereas the tendency nowadays is towards the latter kind. Indeed, acute cases of septic endocarditis have become comparatively rare, and the chronic cases have become all too common. In the altered character of this one disease, therefore, we see illustrated the change that has taken place in bacterial diseases in general:

the acute and virulent sorts have come under control, and are either obsolete or have diminished greatly in incidence; the chronic sorts have increased, and so far, have escaped control.

When we come to examine carefully the actual bacteria that are associated with these chronic infections, or, as Adami conveniently terms them, "sub-infections", we find that they are not to be distinguished by any known characters from the bacteria that are indigenous in our bodies during health. If, however, they pass the barriers of the mucous membrane, and enter the solid tissues of the body, or the blood stream—except perhaps in such minute numbers as can be promptly killed or as promptly eliminated by the kidneys—diseases may arise, generally of this insidious and chronic form. There are several more of such diseases, in addition to septic endocarditis, but I must not stay to speak of them. The general term under which we speak technically of this set of diseases is 'focal sepsis'. It is in connexion with them that many of our patients talk to us nowadays in the language of the bacteriological laboratory—perhaps with the possessive proudly added—as "*my streptococcus, doctor*", or "*my bacillus coli*".

What the factors are that determine these sub-infections we are as yet unable to say. We speak, rather loosely I am afraid, about 'lowered resistance', but we are quite unable to define this term exactly. Until we know more about the nature of the natural defences of the tissues against bacterial invasion, and perhaps more, too, about possible mutations in the bacteria themselves, this part of the mechanism of sub-infections will remain obscure.

If we turn now to another group of diseases which bulks largely in modern medicine, those associated with what are called the internal secretions of the body, or hormones, it is still more difficult to say if these have increased in frequency, because our knowledge of these substances is comparatively recent, and the study of what we call endocrine imbalance is therefore also recent.

With that natural desire to unload the defects of behaviour upon anything that comes to hand which is outside our control, we like to think our 'glands' are at fault when our temper is not well governed, or when we are moody, or when, in any way, we are anti-social. Allowing fully for this weakness, there still remains a large residue of cases in which we can trace the jostle suffered by the normal equilibrium to disturbances in this part of our economy.

If we include diabetes in this group, on account of its close association with the internal secretion

of the pancreas, we have figures which show a considerable increase in the prevalence of this disease. The number of diabetics in Great Britain in the year 1923-24 was estimated at 29,000. The estimate for 1934-35 was 70,000. In the United States the increase is said to be even greater. Since diabetes is not a disease of old age, these figures are not explained by the increase in the expectation of life which has taken place during the same period.

In the sphere of the nervous system, the position appears to be this: that whilst the incidence of what we term the major psychoses, that is, the forms of mental derangement requiring institutional treatment or special nursing, remain much as they did, there is a large increase in the minor psychoses or psychoneuroses, as they are more properly termed. The condition called anxiety neurosis is very common and neurasthenia still more so—indeed neurasthenia is one of our major problems in medicine to-day, both as regards its causes and its treatment.

The first appearance of that form of inflammation of the brain called encephalitis lethargica is quite uncertain, because in the severe cases of influenza cerebral symptoms have often appeared, causing confusion in diagnosis. But serious outbreaks have occurred in the present generation, as well as many sporadic cases. The number of cases in which the brain symptoms appear, the fever having been overlooked, or being absent altogether, is probably still under-estimated. The same applies to influenza nerve symptoms, though these are, of course, less serious. Acute poliomyelitis, better known by its trivial name, infantile palsy, has close affinities with encephalitis, and as there is authentic evidence that this disease existed long ago in Egypt, it is probable that encephalitis did also.

The claim that there *are* new diseases might well be supported, even though they are more interesting than extensive. By way of illustration, there are diseases which are the direct result of modern treatments. There is what we call serum-sickness, for example, a state of things which often follows a week after the injection of serum derived from the horse, as for diphtheria or tetanus.

There are diseases which follow the use of X-rays and of radium. There are effects which we do not aim at, but cannot sometimes avoid, following the use of a number of drugs, both inorganic and organic. We may do an arthritic patient a great deal of good by injecting him with a preparation of gold, yet the metal may disturb his system in such a definite manner that we do, in effect, set up another disease. We may clear a man's tissues of gout by means of a drug

called atophan, and give him disease of the liver. We may assist considerably in the healing of a gastric ulcer by the intensive use of alkalis, and induce a disease called alkalosis. A Scots patient for whom I once ordered bicarbonate of soda was so struck by the relief of his stomach ache that he expressed his fear lest his body would have to pay for a drug which was so "verra powerful". His fear had an element of justification.

By the use of insulin we are able to keep the amount of patient's sugar circulating in a diabetic blood at a proper level. But an overdose may reduce the sugar below the normal threshold and the result is a well-recognized disease.

Then there are new diseases incident upon new occupations. Occupational diseases were well known to the old physicians. Paracelsus described the lung disease of miners at the beginning of the sixteenth century. But T.N.T., and the disease of the liver which may follow from handling it, are entirely modern; and since our forefathers did not make war with poisonous gases, the diseases incident upon their inhalation are peculiar to this more civilized age.

Looking now at the germ diseases over which we still have practically no control, they are probably, nearly all of them, the result of infection of the body by a special type of microbe which we call a virus. Filtrable viruses, they are sometimes termed, because the infecting agent passes through the finest (porcelain) filter available. This infective material has been proved to contain extremely minute particles: the name "elementary bodies" is given to them. We owe the first description of these particles to a Scot named John Brown Buist, who found them in the calf lymph used for small-pox vaccination and also in material removed from small-pox pustules. After the delay that so often follows original observations like these, a number of other workers have studied these Buist bodies, and have confirmed their presence and importance. British bacteriologists have been amongst the foremost in these researches, and in particular, Dr. Mervyn Gordon and Prof. J. C. G. Ledingham.

There is a lot of evidence for regarding virus bodies as being the cause of influenza, encephalitis lethargica (or sleepy sickness), infantile palsy, mumps, measles, and also (some would add) the common cold. What is equally important, there is a growing belief that the mystery of cancer, a disease which equally lacks control in the true sense of the word, may find part of its solution in the discovery of specific virus bodies. That cancer *is* a microbial disease becomes more and more a convincing hypothesis as intensive research into its problems continues. It is not difficult to

visualize these minute virus bodies—each one is from five to ten times smaller than the ordinary micrococci—settling like so much dust, inside the very substance of the cells of an organ, successfully colonizing there (successfully, that is, from their own point of view) and thoroughly disorganizing the cell economy. The life of the cell continues—it is not killed—but it is stimulated (irritated) into that state of chaotic over-growth which is the very essence of cancer. I do not know of any problem connected with cancer as a disease which is not capable of explanation upon the basis of a hypothesis like that. We shall see, if we continue to be patient and painstaking and work with some vision, if this be the truth or not.

It is often held that the incidence of cancer has increased during the past fifty years. This is very difficult to prove. Several possible fallacies come into the argument, especially improved diagnosis, and better methods of registration. Cancer is a disease of the second half of life; indeed, to a large extent it is a disease of old age. An increase in the number of cases of cancer may therefore be no more than a confirmation of what we know already—that the expectation of life has risen by 15 years during the past two generations. Old age brings not only its own infirmities but also its own diseases. Senility is itself a disease, and it is on the increase. If we go on as we are going, a man giving this lecture in sixty years' time will probably stress senility as being one of the most striking of the 'new' diseases.

It seems to me that certain generalizations emerge from this discussion of 'old' and 'new' diseases. There has certainly been a swing over, as it were, from those frequent and devastating gusts of acute and virulent germ diseases to more insidious and chronic maladies. Life was very precarious in Elizabethan days and in the centuries immediately preceding and following them. We must remember that what we know to-day about those terrible scourges refers only to the big epidemics; there must have been thousands of what are called 'sporadic' cases, and there were places where some of these pests made themselves endemic. So that, in addition to the big waves of fevers that brought death in great swathes, there was the steady, constant loss of life in these other ways. Sydenham estimated that in his day fevers accounted for 70 per cent of the whole of medical practice. To-day this figure is not more than 10 per cent.

The Elizabethan was very alive to-day and very dead to-morrow. If we exclude influenza, which still seems to possess something elemental in its potentialities—that is, judging by 1918-19, rather than by the mild epidemic we have just experienced—there are no diseases nowadays

that spell violence as diseases did in Sydenham's time. Unless we call venturing upon the streets and roads a disease. Or war; which is, after all, the greatest of all modern diseases, though it is a disease of the mind and not of the body. It has existed since the race began, but its casualties were formerly trivial by comparison with those due to disease. To-day the proportions are reversed. The Great War cost us more than 700,000 lives and 2½ million total casualties. At the beginning of 1920 there were just over one million war pensioners, and even in March of 1936 there were 400,000 permanent pensions being paid. Of these, 40,000 were on account of mental and nervous diseases. Science has reduced enormously the casualties due to the attack of the microbe upon man; but science has increased in much greater proportion the casualties due to the attack of man upon man.

Then, again, the question arises, what of the integral stuff of our bodies and of our minds? It looks as though our enemies have become the men of our own house, rather than those who have got entrance from without. Why is this? Has something gone wrong with the control? Or, to change the metaphor, are we discharging the battery at too high, and charging it at too low, an amperage? *Why* are we becoming the preys of our own saprophytes? *Why* is the tubing of our blood vessels, and why are the working parts of the pump, wearing so badly? These questions cannot yet be answered, or not in this place!

We are living longer; that is one of the most striking results of the past fifty years of hard but intelligent work on the part of those who have inspired and administered our public health services. Does someone ask *cui bono*? Why live longer if we cannot live more healthily and more happily? For it certainly does look as though, for many of us, our lives become 'thin spun' long before the 'abhorred shears' are due—so why take such pains to defer them? Is our meticulous care of our shadowy present worth it? Is it worth suggesting security to ourselves in a gas mask and an (alleged) bomb-proof cellar? But surely the answer is with us who do the living? How *long* a man lives depends upon his ancestors and the state of the public hygiene. How *healthily* and how *happily* he lives depends upon himself. Also be it observed that mere absence of disease is not enough. Therefore we welcome an attempt by the State to organize the national physique. Later, but I trust not too late, perhaps we might do something to organize the national mind; and so get back some of the *zest* for living that we seem to have lost, and the ability to enjoy this immunity from disease that we have accumulated.