into sterilized flasks. After standing for forty-eight hours the serum was decanted, and 0.2 per cent. of carbolic acid added to it. Two cases of exophthalmic goitre were treated with the serum in doses varying from 5 minims once a day to 7 minims three times a day. Both cases improved under treatment, but the amount of improvement was not greater than might be expected from rest in the hospital and ordinary medicinal treatment, and I was unable to attribute any specific effect to the use of this serum.

More recently I prepared a serum in a similar manner from a goat. In this case, however, the period of preparation was much longer. A young she-goat, nine months old, was selected. Sheep's thyroid extract, the liquor thyroidei (*B.P.*), was employed throughout. This was at first injected beneath the skin, and from March 9th to April 26th 13 injections were made, the doses ranging from 0.6 c.cm. to 5 c.cm., 27.5 c.cm. being injected altogether. As localized abscesses developed after several of the injections, the method of administration was changed, and for a period of two months, from May 17th to July 17th, the extract was given by the mouth in doses varying from 2 c.cm. to 8 c.cm. In all during the period 86 c.cm. were given in 22 doses, which thus averaged about 4 c.cm., or 1 dr. each. On July 24th 400 c.cm. of blood were withdrawn from the internal jugular vein by means of a curved hollow needle into a sterilized flask, while the goat was under the influence of an anaesthetic. After coagulation had taken place 170 c.cm. of clear serum were decanted into sterilized bottles, 0.5 per cent. of carbolic acid being added to it. Two cases have been treated with this serum.

The first case was that of a single woman, aged 22, who, after being much frightened by a dog, developed symptoms of exophthalmic goitre, some six weeks before her admission to the Newcastle Royal Infirmary. At this time she had very marked exophthalmos associated with retraction of the upper eyelids and von Graefe's sign. The thyroid gland was moderately enlarged. The pulse was 120, regular, and of medium tension. Systolic murmurs were audible at the apex and over the pulmonary area, otherwise the heart was normal. The skin was moist and pigmented in places. There was a marked fine tremor of the extended hands, and she was nervous and restless, so that the case was a good typical example of the disease.

Treatment was commenced on July 26th, by first giving 5 minims of the serum three times a day. The dose was increased to 7 minims on the 28th, and to 10 minims on August 1st. The pulse then had gradually decreased to 100, the nervousness and restlessness had diminished, and the goitre appeared to be getting smaller. On August 5th the dose was increased to 20 minims, that is 1 drachm in the day, and with the exception of two days continued up to August 19th. During this time the pulse varied between 106 and 120, and the exophthalmos became slightly less marked. The weight remained practically unaltered. In this case, although some improvement took place, it was not more than usually takes place in hospital on ordinary treatment, and no special effect could be traced to the use of the serum.

The second case was that of a young woman, aged 23, in whom the symptoms of exophthalmic goitre had first developed about four months before she came to the Royal Infirmary on July 22nd. On admission she had slight uniform enlargement of the thyroid gland. The exophthalmos was slight, and the ocular symptoms were absent. The pulse was 126, small, regular and easily compressible. The heart's apex beat was in the fifth intercostal space, one fingerbreadth outside the nipple-line. A rough systolic murmur was audible over the pulmonary area, but not at the apex. The skin was moist and pigmented, and there were other minor symptoms which I need not detail. She was given 5 minims of the goat's serum three times a day on July 26th, the dose being gradually increased up to 20 minims by August 5th. This dose, with the exception of two days, was continued up till August 19th. The pulse varied between 104 and 120, and there was an increase of 8½ lb. in weight. The general condition also improved, but, as in the other case, no special effect could be attributed to the use of the serum.

The risks of surgical treatment are unfortunately so great that I do not consider partial thyroidectomy is advisable in exophthalmic goitre. I have only seen this operation performed in two cases, but they both died within an hour or two. We must, however, remember that Kocher's results in 59 cases, quoted by Dr. Mackenzie,¹⁷ show 76 per cent. of cures, and improvement in 14 per cent., with a mortality of only 6.7 per cent. If operative treatment is undertaken a

local anaesthetic only should be employed, as much of the risk appears to be due to the use of general anaesthesia.

We must on the whole conclude that at the present time in the great majority of cases the best results are obtained by general hygienic treatment combined with the use of electricity and certain drugs, and that as yet no serum or other animal product can be considered to give better results than these older methods of treatment.

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A CONCEPTION OF DISEASE.

Being the Inaugural Address delivered before the Philosophical Institution of Edinburgh.

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AMONG the items which have in recent years been considered necessary to a liberal education is some knowledge of the human body, of its mechanism and incidentally of its infirmities. Physiology is taught in schools, demonstrations of "first aid to the injured" and classes in ambulance work are popular throughout the country, the elements of hygiene are matters of common knowledge, a very general interest is taken in public health, and especially in preventive medicine, while there are few who have not some conception of germs and of the part they play in the troubles of life.

The result is an intelligent concern in medicine which is of infinite advantage to the whole community. There has grown up a kind of popular medicine, founded, the cynic would say, upon that "little knowledge which is a dangerous thing," but based, I would rather insist, upon that little knowledge which suffices to teach the indications of danger. The foundation of any system of medicine is a right appreciation of disease. I venture to think that the conception of disease which is the basis of medicine *à la mode* is not in accord with facts, and, influenced by this impression, I would attempt to present a *religio medici* which, I trust, rests upon surer grounds.

The prevailing idea of disease is of a something that is woful and malignant, evil in origin, evil in intent, evil in effect. The method of its entering into the lives of men would seem to belong to the time

Of man's first disobedience and the fruit
Of that forbidden tree, whose mortal taste
Brought death into the world, and all our woe.

The popular view claims that disease is a calamity, that its end is destruction, and that it is purposeless except in the direction of doing harm. Popular terms bear testimony to the prevailing of this belief. Man is said to be struck down by disease as by an avenging angel, it seizes upon him as does a roaring lion, it consumes him as does a fire. The attitude of the medical man towards disease is that of an opponent to deadly influences. He has to combat an enemy to mankind whose every movement is dark and malicious. There is no symptom of disease that is not believed to be noxious, and as such must be stamped out with relentless determination. If the patient be sick, the sickness must be stayed; if he cough, the cough must cease; if he fail to take food, he must be made to eat. And why? Because these are manifestations of disease, and are therefore of ill-intent and need to be banished.

I shall hope to show—so far, at least, as the examples I shall select are concerned—that there is nothing preternatural in disease, that its phenomena or symptoms are marked by a purpose, and that that purpose is beneficent. I shall hope in these examples to demonstrate that the processes of disease are aimed not at the destruction of life but at the saving of it, and that its manifestations are the outcome of a natural effort towards cure.

Disease, as popularly realized, is not one of the ills that flesh is heir to, but one of the good gifts, for its motive is benevolent and protective. I cannot express this more

precisely than by saying that if it were not for "disease" in the popular sense the human race would soon be extinct.

This unfamiliar proposition may best be demonstrated by instances. An individual meets with a severe wound of the hand from—let us suppose—an unclean instrument. The wound is adjusted and dressed, and what then is the fear of the patient's friends? There is one dread possibility in their minds: "Will inflammation set in?"—"set in," be it noted, as a mariner would speak of a gale setting in. Now, if inflammation *does* attack the part, what will happen? The answer is that the man may lose his hand, possibly his life. This is, I believe, the teaching of medicine *à la mode*.

The facts, however, are as follows: Into the wound—at the time of the accident—certain germs, or micro-organisms, have been introduced. These, finding themselves in a favourable soil, proceed to flourish and multiply. They multiply in no uncertain manner. Those who are curious in the matter of birth-rates may be interested to know that the progeny of one single cell may at the end of twenty-four hours be 16 millions. They are not only prolific, but they produce a subtle poison called a toxin. The invasion, therefore, of the body by a poison-producing host, capable of multiplying by millions in a day, is a matter of some concern, and if the name "disease" be limited to this accident, I am willing to call it a calamity.

Now, how is this germ invasion met? There is a rush of blood to the wounded part, the vessels around the damaged area enlarge to their utmost capacity, in order that as much blood as possible may be brought to the invaded quarter. The limb in consequence becomes red and swollen and of necessity painful, so that it is said to be inflamed. The pain causes the member to be kept at rest, which is a state conducive to recovery. Blood is hurried to the part for precisely the same reason that an army is hurried to the frontier when a country is attacked. At the seat of the wound an invading force has landed; their weapon is poison; they need neither transport, auxiliaries, nor stores, for they live on the body itself, and can add to their numbers without extraneous aid.

The blood, on the other hand, contains certain cells or corpuscles—poor, pale, flabby-looking objects, called leucocytes—which are, however, born microbe killers, and have a passion for fighting which no racial hatred among men could even faintly imitate. These leucocytes do not wait for the invading germs to enter the blood vessels, but make their way out of those channels to meet the invaders in the open. They also have a power of multiplication, and in the field are joined by comrades of the same kin.

There now takes place a battle the like of which no pen has ever attempted to describe. Millions are opposed to millions, and the fighting is to the death. The hosts of Armageddon would be a mere handful to the uncountable hordes which fill the battlefield about the confines of a wound.

The leucocytes destroy the germs by eating them—and thus it is some call them "phagocytes"; they also, by sacrificing their living bodies to the poisons of the enemy, save the country they defend. The mortality of this combat is beyond the limits of reasonable commutation. The arena is piled up with the dead, until at last the living, the dead, the poisoning and the poisoned are thrown out in the form of what is known as "matter" or pus, and the trouble probably ends.

Should the invading force beat down the first line of defence and find a way into the channels of the body, then a stand as vigorous is made at the second circle of entrenchments, the lymphatic glands. In the case of a wound of the hand the glands under the arm oppose the invading host. They inflame; possibly they suppurate. The subject of this condition grumbles, and deplures the misfortune which, in addition to his wound (which was trouble enough), has given him an inflamed hand and now a tender gland under his arm. The blame is illplaced. It is the story all over again of Gellert, the faithful but misunderstood hound.

This, then, is the inflammation that is regarded as a dire disease, a portent of calamity. It is to the multitude a disorder whose symptoms must be combated by every means within the surgeon's power. In reality it is a wholly benevolent process with one purpose, that of protecting the body, and one aim, that of cure. If it fail, it is only because the task was impossible, never because the generous intention faltered. For centuries there has been presented the strange spectacle of men of science struggling to the utmost to thwart, to curb, to annihilate a process of cure; volume after volume has been written upon the treatment of inflammation, and schools have been formed to uphold, with much wrangling, this method or that. At last, amidst the Babel of

suggestion, advice, and aimless discourse, a surgeon, Lord Lister, points out that if the invading force be prevented from landing, the country, or body politic, will remain at peace, and the aid of inflammation will be uncalled for. Such is the whole teaching of antisepticism.

In the meantime, how many must have prayed that this dire disease would vanish out of the lives of men; yet, without the protection of inflammation, the human race could hardly survive a month.

It is interesting to notice that, amidst the clamour of the schools and the pronouncements of scientists, one little element of common sense has persisted in the form of the humble poultice, the secret encourager of inflammation.

Since inflammation is a method of cure to be limited rather than hindered, modern treatment concerns itself mainly with the prevention of conditions which make inflammation a necessity, and with the carrying out of such hints as the process provides. When inflammation, therefore, does supervene, it is the surgeon's part to make it as tolerable to the patient as possible, and as soon as it becomes evident that Nature is intending to throw certain matters from the system, he, acting on that hint, opens an abscess or incises a tense swelling.

In that phase of the inflammatory process, known by the dread name of peritonitis, the benign intentions of what are termed "manifestations of disease" are very remarkably illustrated. The peritoneum is most susceptible to the inroad of bacteria, whether they find an entrance through a wound or through a breach in such an organ as the appendix. The moment the invasion takes place, the symptoms of peritonitis appear. These symptoms are nothing more than Nature's efforts towards the saving of life from an undoubted disaster. They serve to at once secure those conditions which are most conducive to recovery, they provide prompt means for closing the breach and for staying the spread of the trouble. Peritonitis has always been spoken of as the operating surgeon's deadliest enemy; it is, in reality, his best friend.

The general mortality of the common disease known as appendicitis is low. This fortunate circumstance is due to peritonitis, for without that much abused ally every example of the disorder would be fatal. Even now it is usual to say that a death from appendix trouble is due to peritonitis; it should rather be said that it came about in spite of peritonitis. Peritonitis is, indeed, never a calamity, for it is never other than a process of cure. It is only the accident which calls it into being that is wholly disastrous.

To go further. There are certain disorders which are called infections because they have been proved to be due to an infection from without. In such maladies there is the simple disposition of a seed on one hand, and of a soil, on which it can grow luxuriantly, on the other. The seed is a specific bacterium, the soil is the body of a living creature. When the soil is generous the individual is said to be susceptible, when it is inhospitable he is said to be immune. The common cold is no doubt a so-called bacterial disease. It can be "caught," it can be conveyed from person to person. The germ would seem to linger in the haunts of men, and to find pleasure in the "madding crowd."

When I was concerned in starting hospital ships in the North Sea I found that fishermen, returning to port after a two months' voyage, were very prone to catch cold. Many told me that they developed a cold whenever they went ashore. The chilly blasts of the North Sea in the winter were unpleasant enough, but they were not laden with the cold-in-the-head bacillus, while the air of the cosy seaport was. It is often claimed that the common cold is due to cold. In connexion with this fallacy I may quote the following from the report of Dr. Wilson, surgeon to the *Discovery* in the recent Antarctic expedition. Speaking of "colds" he writes: "We were entirely free from this trouble from the time we entered the ice to the time we reached New Zealand, two and a half years later, except on two occasions which were somewhat remarkable. On the occasion of our unpacking a large bale of woollen clothing, long after we had been in the ice, a very virulent form of nasal catarrh ran through the whole ship's company. Undoubtedly in this case the infection was in the clothing. On the second occasion the catarrh was accounted for by the fact that our ward room carpet was taken up for beating, and the infection, which had lain dormant for many months, was liberated and had the usual effect."

The germ enters through the air passages and, finding a suitable medium for growth in the lining membrane of the nose and throat, develops there. The symptoms which result

are too well known to be dwelt upon. There are the sneezing, the catarrh, the sore-throat, the cough, the malaise. According to popular medicine, these phenomena constitute a disease, are purposeless, profitless, and wantonly distressful, so that the victim demands from the physician a means for stamping the trouble out. These symptoms, however, are in the main the manifestations of a process of cure and are so far benevolent that without them a common cold might be a fatal malady. The copious catarrh, the persistent sneezing are practical means of dislodging the bacteria from the nasal passages, while the cough removes them from the windpipe. The febrile state, I would venture to believe, is the outcome of an activity aroused in the blood for the purpose of neutralizing the poison engendered by the invading host.

He who grumbles about his cold is finding fault with a measure of relief to which he owes his life. What he may justly grumble at is the undoubted misfortune that he is the subject of a bacterial infection, and he may also, with reason, complain of the discomfort incident to being poisoned. It is hard to blame Nature, as he proceeds to do, for successfully defending him against the effects of this casualty.

Methods of treatment, whether carried out by Nature or by art, are seldom pleasant, but they are not blameworthy. A man who has accidentally swallowed poison should not complain that the poison makes him sick if the occurrence saves his life.

How preventive medicine plays its part in dealing with so-called disease is well illustrated by malaria and Malta fever. The fons et origo mali in malaria are so well understood as to need no further reference in this place. That distressing malady known as Malta fever is the scourge of the Eastern Mediterranean and the cause of much sickness both in our army and navy. The victim of this fever becomes very ill, and treatment, so called, seems to benefit him but little.

It is found that the best thing that can be done for the patient is to send him away from Malta. It has been discovered that this fever is due to the entrance into the body of a bacterium. Unpleasant symptoms follow, which are said to constitute the disease. These are considered to be purely calamitous, and to be as little profit to the victim as were the doings of the torture chamber in mediaeval times. A just estimate of these symptoms will show that, while some are no doubt due to the actual poison introduced, the major disturbance is the outcome of an effort on the part of the body to protect itself from that poison. The symptoms are, for the most part, the manifestation of a vigorous defence, of a method of cure, by which, under favourable circumstances, the body may be rid of its tormentor. In this association the term "medical treatment" seems out of place.

Those who have been patiently tracking down the poisoner to whom Malta fever is due took note of the fact that practically all the milk drunk in Malta is goat's milk. They then discovered that the goat is subject to Malta fever, and that the milk consumed daily by both the sick and the sound is often swarming with the germs of this dire disease. If they can show that the bacterium is conveyed to man in no other way than through goats, then the story of Malta fever closes—happily, like the comedy of old days.

There is something pathetic in the picture conjured up by this discovery. The wasted man, sick unto death, the kindly well-meaning physician feeding him with milk and so feeding him with germs, yet struggling all the while with tragic earnestness to cure his symptoms, such symptoms being the outcome of Nature's efforts to neutralize the poison and bring the man back to health. One need no longer be surprised that the one successful measure in the treatment of Malta fever has so far been to send the man away from the island.

The terrible disease known as bubonic plague is due to a well-recognized bacterium. It is clearly enough to be demonstrated that the so-called symptoms of the malady are in reality the expressions of a desperate attempt on the part of the body to fight the venomous, rapidly-spreading germ. The many lymphatic glands which become inflamed in the progress of the disease all bear testimony to the efforts made to resist invasion and to cast off the invaders. The frequent lack of success is due to the virulence of the attacking germ, not to the supineness of the invaded body. The conspicuous symptoms of plague are expressions of an attempt at cure and are beneficent in intent. If they are execrated it is because they are not understood. It is the story once more of Gellert, the hound.

There are many interesting features in connexion with the spread of plague. There is a familiar expression in common use to indicate utter futility of purpose—"rose water for the

plague." The cynicism is intended to convey a sense of absurdity. There would, however, be no absurdity about the expression if it were changed to "flea powder for the plague."

Plague may possibly be conveyed in many ways. It is well known that rats are very liable to plague, and that a remarkable mortality among rats is a common feature in certain plague epidemics. There is a strong conviction among investigators that plague is often communicated through a wound or scratch, or by so small a lesion as an insect bite. Rats are infested by fleas, and the fact that rodents are not the only living creatures patronized by fleas need not be dwelt on. I may now make two quotations from the interesting monograph by Mr. Hankin on the *Epidemiology of Plague*. "In April, 1901, a rat was brought to me that had been found 'dead in the grain dealers' quarter in Agra shortly after the first human case of the disease had occurred. On the rat I found a living flea. In the stomach of the flea were found the 'bacilli of plague.' Elsewhere he writes: 'In the spring of 1901 I was studying fleas obtained from cats and dogs in Agra, and found no difficulty in obtaining as many of these insects as I required. But at the commencement of the hot weather I found that the fleas on the cats living in my laboratory had suddenly and completely vanished. Recognizing that the matter was of interest and wishing to subject it to an adequate test I at once offered a half-day's wages to my servants for every flea they could catch. Though the servants lived in different parts of the town and in surrounding villages not a single flea could they produce. A restricted plague epidemic that had been going on in Agra suddenly came to an end at the time of the disappearance of the fleas.'" Other evidence strongly suggests that the flea may be a means of communicating plague from the rat to the human being.

Upon the precise nature of those activities in the body which are misnamed the symptoms of disease some light is afforded by such a malady as diphtheria.

It is noticed in connexion with infective diseases that certain classes of animals are susceptible to one malady and immune from another; it is also observed that there is an immunity as well as a susceptibility which belong to the individual as distinguished from the class. For example, typhoid fever attacks man, but not animals; rinderpest attacks animals, but not man. The horse is liable to glanders, but the pig is immune. The white rat is immune against anthrax, but can be made susceptible by feeding on an exclusively vegetable diet. Fowls are likewise immune, but can be infected by anthrax if kept in a state of continued cold. The immune pigeon can, in a similar manner, be made susceptible by starvation. The favouring of infection in man by exposure to cold, fatigue, and famine is well known.

Most notable of all is the fact that in certain diseases one attack exempts the individual from further onslaughts of the same trouble. How, in such case, is immunity secured? This somewhat wide question may be illustrated by a particular instance. It is known that one attack of diphtheria appears to protect the individual against further outbreaks.

The history of this affection is as follows. The bacterium gains access to the throat of a susceptible child, and settling on the tonsils, finds a favourable soil for growth. In that growth it develops a poison or toxin, which finds its way into the blood. The moment the bacillus effects a lodgement the cells of the body rise up against it, and, for a time at least, make a successful defence. An active inflammation is induced, one evidence of the energy of which is shown by the fibrinous exudation which forms over the invaded surface. This much-dreaded membrane is the outcome, not of a vicious and purposeless action, but of a process which has for its sole intent the arrest of the destroying host.

At the same time there is developed in the blood a substance of indefinite nature, which is an antidote to the poison filtering in from the disturbed area. This substance is called an antitoxin. It is not existent at the time of the infection. It is produced on the spur of the moment, and with such good result that many patients recover from diphtheria. The child in any case becomes very ill, and it is said that its distressing symptoms are due to the disease, and are therefore ill-meaning.

The symptoms—notably the fever—are due to the excessive activity of the body in its attempt to ward off the bacterial invasion, to the inflammation, to the very elaborate blood changes concerned in the production of an antitoxin. That some degree of the ill condition is due to the poison which is entering the system is undoubted; but when the phenomena of poisoning are paramount the child is

dying. Without what are called the symptoms of diphtheria no case could recover. The child would succumb at once to the poison, as do patients from the plague who receive so large a dose of the virus that the body cannot cope with it. In such calamity the man dies in a few hours, simply poisoned, before any characteristic evidences of the infection have appeared.

In diphtheria the workings of the disease have been so far recognized as efforts towards cure that they have been imitated in the modern treatment of the malady. In this wise. The horse can be inoculated with diphtheria, but, being little susceptible to the bacterium, is hardly made ill by the incident. The toxin of diphtheria is injected into the horse, and, as a result, the blood of the animal at once develops for protective purposes an antitoxin. Repeated and increasing doses of the poison are introduced, each inoculation being followed by an augmented formation of antitoxin in the blood. At last the serum of the blood of this much-infected horse is so potent in antitoxins that, when drawn off and injected into the body of any child suffering from diphtheria, it is possible for the disease to be stayed. The child, on its part, is labouring with infinite effort to produce the antitoxin. The horse's blood provides it with the antidote it is inadequately manufacturing. The success of the serum treatment of diphtheria is now beyond all question.

To take one other example. The whole of the manifestations of tuberculosis are expressions of an unflagging effort on the part of the body to oppose the progress of an invading bacterium. The calamity, in this instance, is the settling of the germ in the body—an event of which the subject is unconscious. The phenomena which follow—the symptoms, as they are called—are efforts towards cure, and, under favourable conditions, they restore the patient to health unaided.

It is not necessary to pursue the matter further. I have limited the application of my proposition to diseases the nature of which is comparatively well understood. There are unfortunately a large series of disorders whose secrets have not yet been fathomed. If it be claimed that they afford exceptions to the theory advanced, I am content to wait until the exact nature of those affections is made manifest.

One cannot fail, however, to be met with the assertion that at least the machinations of cancer have nothing in them that is good. To this I have at present no answer. What constitutes malignant disease is known to no man, and there is little profit in being dogmatic about the unknown.

In this connexion an experience in the past may be recalled with advantage. There is a disease of blood vessels known as aneurysm in which the wall of the artery dilates so as to form a sac which tends to become thinner and thinner, until at last it bursts and the victim dies. Within the widening sac Nature forms a curious clot, layer by layer, with infinite patience. This clot may ultimately fill the cavity, close it, and cause the lesion to be cured. There was a time when this carefully-deposited clot was considered to be a malignant growth, and under the influence of that conviction it was cut out by the surgeon. It was claimed to be the product of disease—a cancer—and as all the manifestations of disease were convicted of ill intention, the clot must needs be got rid of. So with much labour and more risk the nearly completed product of a cure was sliced away. It was as if a drowning man had cut the rope he found about his waist for no other reason than that he could not understand how it came to be there.

In time the truth was made clear, and then the accepted method consisted in aiding in every possible way the formation of the much abused clot, to such extent that the surgeon but humbly imitated the phenomena of a so-called malignant disease.

It would seem that cancer reproduces under inopportune circumstances the type of exuberant growth which is normal and opportune when the structures of the body are being formed, that it is a strange resuscitation in the declining body of a process which is normal in the young. What is the purpose of this out-of-place activity no one can tell. In the absence of any knowledge, it is in conformity with custom to consider it to be malign in intention.

If I were compelled to add to the list of pure surmises, I would point out that during the period of development in childhood there are certain glands in active state which would appear in some way to control, limit, and modify a process of production which might without such control run riot. It is noteworthy that one such gland, the thymus, wastes and vanishes after the period of greatest bodily activity is over, and it is impossible not to wonder whether the introduction of the active principle of such a gland in a case of cancer

would exert an influence late in life which it seems to be intended to exert when growth is alert in the young. Thymus extract has been largely tried in medicine, but it does not appear that any active principle has been isolated from the gland and used. I mention this merely as a speculation as to the line which it is conceivable that the treatment of cancer may take.

In conclusion, I may venture to hope that the suggestions set forth will at least foster an interest in the work of the physician, will lead to a sympathy with his endeavours, and an appreciation of his difficulties. At the same time, I trust I may have raised the doubt whether, so far as disease is concerned, the workings of Nature are quite so ill-intending as we are often disposed to consider them to be.

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REMARKS ON THE TREATMENT OF SYPHILIS BY INTRAMUSCULAR INJECTION OF MERCURY, WITH AN EPITOME OF 3,230 CASES.

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THE following statistical tables—one from the Sanitary Report of the Principal Medical Officer, His Majesty's Forces in India, 1904, the other taken from the Army Medical Report for 1903—show a state of affairs, as far as syphilis in the army is concerned, which is, to say the least, encouraging:

From Report of Principal Medical Officer, H.M. Forces in India, 1904.

Year.	Invaliding Rate Per 1,000.	Admission Rate Per 1,000.	Year.	Invaliding Rate Per 1,000.	Admission Rate Per 1,000.
1897	10.26	507.8	1901	6.26	276.0
1898	8.70	371.4	1902	5.12	281.4
1899	6.53	313.5	1903	3.06	249.6
1900	6.24	298.0	1904	2.83	200.3

The ratio per 1,000 under the various headings shows a decided reduction on previous years, the most important being those under the heads of "Invalids sent home" and those "Discharged as finally unfit." It may not be entirely correct to attribute these good results altogether to the more efficient way in which the treatment of syphilis has been carried out, but that it has played the greatest part in bringing about these reductions there is little doubt.

During the last ten years there has been a great revolution in the manner of dealing with syphilis in the army. In the first place, one maxim in connexion with it is generally accepted—namely, "that to treat syphilis successfully, continuous treatment of it for a considerable time is absolutely necessary." Better means for carrying this out than had hitherto prevailed have been sought for, found, and brought to bear, with the results as given in the statistics quoted. These methods which have been adopted, or, rather, tried are as follows: On a soldier contracting syphilis he is at once placed on the syphilitic register, which necessitates his presenting himself for medical inspection once a week for months at a time; this alone insures his obtaining some sort of treatment should he develop further active signs of the disease.

METHODS OF TREATMENT.

The actual methods of continuous treatment which have been tried are as follows:

1. On the syphilitic patient being discharged from hospital, he continues to take mercury in the form of pills given to him at his weekly attendance.
2. He is ordered to attend two or three times a week, when inunction of mercury is carried out by himself.
3. Intramuscular injections of mercury are given.

Of the first two modes of treatment, although better than none, all that can be said is that they are most unsatisfactory,