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LECTURES ON PUBLIC HYGIENE AND MEDICAL POLICE.

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SECOND LECTURE.

We have, in our last lecture, taken a short review of some of the principal elements of climate, as affecting human life and health; we shall now proceed to notice what is worthy of attention to the public hygienist, in the more practical and economical objects of local climate, or what affects the salubrity of particular sites and places. In the first place, we shall make a few remarks on what is called *malaria*, without at present touching upon those local deteriorations of the atmosphere occasioned by known sources of contamination, as from several manufactures, chemical processes, or what are legally termed nuisances.

The term *malaria*, as you know, is an Italian word, and literally signifies bad air, but it is applied by medical topographers and philosophers, in a more special sense, to those conditions or impregnations of the air, generative of a peculiar class of diseases or unhealthiness. This malaria is much better known and appreciated by its effects on the human body, and often on that of animals, than it is by its physical or chemical nature. Many persevering attempts have been made by pneumatists to analyze it, without their being able to detect anything beyond what are the common constituents of the ordinary atmosphere. The only attempts of this kind that are recorded to have elicited anything like a discovery on the matter, are the experiments of Magendie and Dr. Prout. The former succeeded in condensing a portion of known malaria from a deadly locality, by which a viscid precipitate took place, and the very small portion thus obtained he gave to a dog in a little food, by which the animal was soon seized with shivering, and died of a putrescent fever shortly afterwards. The other instance was, that during the epidemic cholera in 1832, Dr. Prout ascertained the air to have gained an unusual weight, not as indicated by the barometer, but by its weight in proportion to its bulk. He does not pretend to say to what foreign introduction this increased weight was owing; only he is

fully of opinion that the foreign or adventitious ingredient was the cause of the epidemic disease, for with the cessation of the disease the air resumed its normal levity. He considers this foreign body as a species of malaria. Berzelius mentions a very singular effect which a bubble of seleniuretted hydrogen, not larger than a pea, had upon him in producing an attack of catarrh and slight pneumonia, which required a blister, and hence he believes that epidemic catarrhs, or influenzas, might originate from those emanations of this diffusible gas that take place from volcanoes, or through crevices in the earth, from the effects of an earthquake. As I mentioned in my last lecture, sulphuretted hydrogen gas has been detected in some of the bays and river mouths in Africa, but principally in the waters on the coasts, from the corroding effects which these waters have on the copper sheathing of vessels. Such researches as these have detected extraneous matters in the atmospheres found to be unhealthy, but the greatest ravages from fevers, plague, and other epidemics, have occurred without anything deleterious or foreign being found in them, on the strictest examination.

The existence of this malaria, therefore, is removed out of the province of eudiometry and chemistry, to any practical purpose, and it is founded almost entirely on its effects, and on the probability of its existence, when the circumstances are found to be present, which generally accompany its effects in other places. It is much to be regretted we have so little exact or sound philosophy on the subject; because, if we had, it would save a host of disputes, and a multitude of gratuitous and complacent assertions. The utmost that has been ascertained is, that this demon of the air prevails most in tropical countries, along the sea coasts, shores, and banks of rivers, or of inland lakes, or in marshy plains or vallies, where vegetation is rich, and especially where this vegetation is undergoing decay, and that annual decomposition which takes place after the autumnal rains. In many localities, however, none of these physical conditions of the earth and vegetation are observed, and yet a very deleterious malaria is found to prevail—as at Gibraltar, which is a dry and almost barren rock, also in some of the West India Islands. In these instances it is only found that the

malarious effects appear after seasons of rain, which have saturated the dry soil, which has afterwards given off much evaporation under a cloudless sun. There is no doubt but green wood or vegetables, under decomposition, in warm weather, will emit a very morbid miasma, productive of the severer forms of remittent, if not of yellow, fever. Of this a very remarkable instance came under my own notice. In the year 1815, the ship of war, in which I was surgeon, took in a good deal of green wood at Demarara for the purpose of firewood. The ship was quite healthy at the time, but after being at sea for about three weeks, and without being in any other port, fever of a violent congestive character made its appearance among the men and officers. I attended them till I was myself attacked and laid up, when the ship was obliged to run into Barbadoes for relief, where forty men and myself were conveyed to the hospital. The ship afterwards returned to her cruising ground; it being thought she would get clear, and that sooner, of the fever, by being at sea, than lying in harbour. The men's diet was also modified, as they had not been long from a cold climate; but no, the fever continued to explode, and the ship was again obliged to return to port. On more mature consideration of what might possibly be the cause, the hold was examined, and found very foul and fetid from the green wood fermenting and decomposing. It was immediately cleared out, the men were quartered on shore, and the ship was fumigated and whitewashed; after which, on the return of all the crew and officers, she had not a single case of fever, nor of any epidemic sickness. Several similar cases have occurred both in ships and on shore, all tending to show that vegetable matter, under decomposition in tropical regions, and in the hot autumnal seasons of temperate countries, will generate a malaria, having deleterious effects upon the human body, and that mostly in the form of fevers, intermittent or remittent.

Though putrefaction of vegetable matter has not been considered by some observers as necessary to the generation of malaria, yet on a strict investigation of the circumstances and locality, it will be found that there have been some vegetable remains involved in the negative side of the problem. Dr. Ferguson, an inspector in the army, in the Transactions of the Royal Society of Edinburgh, has cited a few instances, where during the war, epidemic fevers broke out in the army, where he could detect no vegetable decomposition going on. Among these places are the leeward shores of Guadaloupe, the soil of Walcheren, the plains near Ciudad Rodrigo; and he is of opinion that the only condition indispensable to the production of marsh poison on all surfaces capable of absorption, is a paucity of water where it had previously recently abounded. Heat and moisture would then appear to be the only requisite conditions, according to this author; and as some can see

nothing pestiferous in the mere vapour of water, they have been obliged to have recourse to some unknown telluric effluvia being elicited from the earth by the heat, and the little menstruum of moisture evaporated. Leaving this speculation to find its own obscure way, we have abundant evidence of a morbid malaria being generated by even the steeping in water of flax and hemp, the decomposition of potatoes; besides the instance related of the effects of green wood in the hold of a ship, by a more serious one of the ravages of fever on board the Priamus frigate, from bilge water acting on wood chips and shavings that were left in the hold of the ship, as mentioned by Dr. Burnett.

The most prolific sources of malaria, as I have mentioned, are along the sea shores and bays of rivers, and especially where the tide mingles with fresh water in lagoons and marshes bordering on the sea. Where the fresh water is mixed with salt, even if stagnant, or where the tide has free and quick ingress and efflux, the generation of malaria is either absent or very trifling, and innoxious, even under a hot climate, and with ordinary vegetable decomposition. The circumstances which give its production most intensity, is where salt water mixes at high tides with the fresh of rivers or marshes, in lagoons or flat basins, where vegetable decomposition is going on. It is here we find at least, that the oxidation of the vegetable matter decomposes the sulphate of soda and magnesia in the sea water, and gives rise to the extrication of sulphuretted hydrogen and of carburetted hydrogen, which are either absorbed by the water or bottom bud, or given out into the atmosphere. How far these gases are productive of the marsh and pestilential fevers in question, is not yet correctly ascertained; but this much we may conclude, that their generation under these circumstances shows that much chemical change does take place, and therefore they are in some way connected with the pestiferous impregnation of the local atmosphere.

Even in our own country, before the fenny land of the Bedford level in Lincolnshire was drained, and where occasional inundations of the sea threw in upon the low lands bodies of salt water, which were left to act upon the marsh vegetation, and to be evaporated, it was remarked by Dr. Hamilton, of Lynn, that a most offensive effluvia was generated, which was often followed by most violent and epidemic fevers, of great mortality, during the succeeding hot summers and autumns that followed these marine inundations.

In meadow and marshy districts in Scotland, and in this county where there was a wet clay subsoil, I have found, after a wet summer followed by a hot autumn, that species of fever to prevail which is allied to the typhoid or dothinerite, and having a remittent character. From my observation I have been led to attribute this fever to marsh

effluvia, generated from moisture and heat acting upon the decaying grasses; for I found it only to prevail in certain lines of the country, and to circumambulate villages and towns, but not to appear within them, though the intercourse was open and frequent. This aerial poison, in the greater number of cases, is accompanied by no offensive nor perceptible smell whatever; though it in some instances is both noisome to the senses, and pestilential; and therefore the vegetable decomposition that is going on is likely in many cases to be different from what is usually termed putrefaction. From this circumstance, and from these fevers or other malarious diseases, only occurring during the retrocession or decay of vegetables, and never, where plants are growing into life and flower—at which latter period, according to Pouilliet and others, they are continually giving off electricity to the atmosphere, which they render *positive*—I have been led to think, that at the fall of the season their electrical condition is changed, and consequently the incumbent atmosphere will be also altered if not rendered *negative*.

There are so many instances where malaria is generated and no animal is found to exist, that we may conclude that the presence of animal matter is not essential to the formation of the poison. When it is present, it may modify the nature of the malaria, but of this we have no good evidence, for the fevers generated by animal effluvia generally arise from living bodies and not from the dead. Besides, the healthiness of butchers is remarked, though this might be attributed to eating a good beefsteak, as much as to the innocuousness of killed carcasses. Knackers, bone-grinders, glue-makers, furriers, and tanners, are, moreover, seldom or never subject to any pestilential disorders that can be traced to malaria, arising from their occupation and their exposure to dead animal effluvia.

Another important subject relating to malaria is the law or mode of its propagation. Upon this head we have many detached facts, but little determinate or systematic knowledge. We may however easily suppose that the effect of the poison will be more intense in proportion to the proximity to its source. The nearer the source the greater the condensation, which is again regulated by the heat of the weather and the strength of the winds. From the cooler atmosphere and generally the calmer state of the winds at night, the malaria after a hot day will become much condensed by night; and therefore it is found, that the proximity of swamps during the night is especially deleterious, aided, no doubt, in its effects by the less resistance the body then has to the impression of noxious agents.

Mists and fogs are also found to add considerably to the intensity of malaria, partly owing to the calm that reigns at the time, and the affinity which the poison has to moisture. To the general law of proximity giving intensity to malaria, there are some exceptions, for it is sometimes found that

malaria has more effect at the top of a hill than at the bottom, where it is generated. Thus Dr. Mac Cullock mentions, that at Malta, the malaria which is produced beneath a cliff on the beach, has no effect at the spot itself, while it affects, sometimes in a most severe degree, a village situated at the top. Chains and ranges of hills have been powerfully influenced by malarious emanations, which are produced at a distance, if they are in the direction of the winds blowing from the poisonous sources. Thus M. Monfalcon mentions that the deleterious effluvia from the stagnant water of Lake Agnano, are often carried to the N. E., to two or three villages, and even to a convent, a league distant, and situated on a high mountain. In Corsica and Italy, chains of hills, very far from morasses, but placed in the line and the direction of the wind from them, have been entirely depopulated from their transported miasmata. The distance to which the malarious emanations may extend by gradual diffusion, has been calculated by Monfalcon to be 1.400 to 1.600 feet of elevation, and from 600 to 1000 in a horizontal direction. These are the extreme limits in Europe, he supposes; but their activity is much more extended in warm climates. In the West Indies it is said, that vessels at the distance of 9,000 feet from a marshy coast have felt their baneful influence. Much will depend in these localities, on the strength and direction of the wind, and whether there is much aqueous vapour in the atmosphere or not. The attraction of trees for the poison is great, and it has been repeatedly observed, that not only a few individuals, but even populous villages, situated in the most swampy districts, have owed their security to a screen of woods interposed between them and the marshes. Facts of this kind suggest the planting of trees as a fence in the vicinity of irreclaimable marshes, and the refraining from cutting down such situated trees in new settlements, and in unreclaimed colonies. It is an interesting fact, that many parts in North America, that were formerly free from malaria, and very healthy, before the neighbouring belts of forests were cut down, are now, on the entire denudation of the woods, perfectly uninhabitable during the summer and autumn, from malaria. They will likely continue to be so, until the vegetable exuvia and matter are nearly worked out of the soil by cultivation and cropping. The floors of dwellings, from their porosity, are supposed to have a similar attractive power, where they are situated over a malarious soil, and therefore the second stories are found to be much more salubrious than the ground ones. As a sleeping apartment, the upper should always be chosen, and where this cannot be done, the bed should be elevated a few feet from the ground.

The notice of these economic arrangements leads us to consider some more familiar effects of an insalubrious nature, that have been, with more or less justice, attributed to malaria. To its influ-

ence, acting in particular sites and countries, are ascribed organic affections of the liver, spleen, and mesenteric glands; certain derangements of the stomach and intestines; dropsy, palsy, apoplexy, and idiocy, as manifested in the marshy districts of Tuscany, and in the cretinism of the valleys of Switzerland. The *plica polonica* is also thought to be occasioned by the long application of certain malaria. Cholera, dysentery, diarrhoea, are, by many writers, referred to its more brief and localized agency; and there is still more reason to think, with justice, that intermittent neuralgia may occasionally be referred to this meteoric cause, though I cannot agree with some who add rheumatism to its effects. It is observed, that the natives of marshy districts, who permanently reside in them, lose much of bodily and mental integrity, being contaminated by the poisonous air which they inhale. Their aspect is sallow, and prematurely senile; their features are often wrinkled, their muscles flaccid, the hair lank and light coloured, the abdomen tumid, the stature stunted, and the intellectual character feeble and low, if not degraded. These physical characters are much impressed upon the inhabitants of Walcheren, as I have personally witnessed. They seldom attain any advanced age. It is also remarked that even the inferior animals partake of the general depravation, as they are also stunted and short lived.

In considering the question of climate, as the public health is affected, there is another important element which must never be overlooked, and that is water, both as an article of diet, and as subserving greatly to affect the comfort and cleanliness of the inhabitants in any country. As far as it is an object of drink and of culinary use, its purity is of the deepest importance, as it is the universal beverage of the generality of mankind, or the vehicle by which the greater part of our food, animal or vegetable, is prepared for our stomachs.

In its natural supply for our wants, it is either derived from rain collected in tanks or cisterns, from springs, or from rivers. Pure water should be colourless, destitute of smell, and have but little taste. It boils, when heated under a mean pressure of the atmosphere, at 212° , and freezes at 32° . A cubic inch of it, at the temperature of 60° , weighs exactly $252\frac{1}{2}$ grains. Under the mean temperature and pressure, it is about $810\frac{1}{2}$ heavier than the same volume of atmospherical air. It is composed of eight parts, by weight, of oxygen and one of hydrogen, or of one volume of oxygen gas and two of hydrogen gas. Water, whether in ponds, rivers, or wells, always contains a quantity of atmospherical air, but rain water contains most. Dr. Thomson finds, that 100 cubic inches of water from the firs of these sources, if left a sufficient time exposed to the air, absorbs two cubic inches of azote and 0.74 oxygen, therefore the air contained in water is

somewhat purer, or contains a greater proportion of oxygen gas than atmospherical air, or as 27 oxygen to 73 azote.

But this aerated state of the water does not exist, when the water is stagnant, or impregnated with vegetable or animal matter. It is found that the water of the Thames at London contains so little oxygen gas, that phosphuretted hydrogen gas may be left standing over it for 24 hours, without losing its combustibility, while a very short exposure over the water of any clear stream soon destroys its spontaneous combustibility.

The agreeable flavour of good water is owing to its containing air, for when it is boiled, its taste is vapid and much less agreeable. Well-water often contains carbonic acid gas, which renders it a still more agreeable beverage. When water contains the remains of animal or vegetable substances, it may contain azotic and carbonic acid gases, without any trace of oxygen gas, because these substances combine with the oxygen and so abstract it. For the same reason sulphuretted hydrogen gas and oxygen cannot exist together, as the sulphur combines with the oxygen, though azotic gas may exist with sulphuretted hydrogen. The existence of carbonate of iron in water is also incompatible with the presence of oxygen gas in it; as this salt is generally in a state of protocarbonate, or protoxide, and readily attracts another dose of oxygen when it becomes exposed to the air, and is converted into a peroxide, and is precipitated of a brick-red colour, at the sides and bottom of the surface stream, as we may observe in many rills, and also in water from springs issuing from ferruginous strata.

As water constitutes a most important and essential part of the food of man, as well as of all animals and vegetables, it is highly requisite it should be pure and of necessary plentifulness. Even of the solid food which we eat, water constitutes full four-fifths. It may even be said that nine-tenths of all the food we take is nothing else but water, and in cases of starvation from solid food life has been long sustained by fresh water alone.

To determine its purity and wholesomeness, the first step is to ascertain the specific gravity of the water under inspection, next its taste and smell, and to observe whether it is transparent and colourless, or muddy and coloured. The specific gravity of distilled water being 1.000, good river water should not exceed 1.002, or 1.003, but that of mineral waters is sometimes as high as 1.028.

To determine the quantity of foreign matter in any water, we may employ a common eight-ounce phial, weigh it, mark its weight, and then put 1000 grains of the water into it; place the phial in a sloping direction on a sand bath, with its mouth open. We continue the heat till all the water is evaporated, when the residue is to be urged by a heat of 500° , to expel all the adherent water; we again weigh the phial, the increase of

weight will show the quantity of foreign matter in 1000 grains. Sulphuric acid in water is detected by the chloride of barium; hydrochloric acid by the nitrate of silver, the precipitate being dissolved by liquid ammonia. Carbonic acid is detected by its having an acidulous taste, and tinging litmus paper red, which properties it loses after boiling. The litmus paper also recovers its blue colour when exposed to the air.

The earths of lime and alumina are the most common impregnations of spring and pump water, and give that quality to water which is called hardness, which unfits it so much for culinary or detergent purposes, especially when it contains the latter substance, alumina. Even as a constant beverage, either of these earths will be unwholesome, and produce obstructions and derangements of the intestinal secretions. Lime may be detected by oxalate of ammonia, which occasions a white precipitate, or a milkiness. Should no precipitate take place, the water may still contain a little lime, to detect which, we reduce the water by gentle evaporation one-tenth, then drop in the oxalate; if no precipitate, then there is no lime. If any water, after being boiled to expel any free carbonic acid gas, be mixed with pure lime water, and a white flaky precipitate fall, we may conclude it contains a salt of magnesia. Aluminous impregnations are readily detected by a solution of soap, on the addition of which, the potash or soda, combines with the acid, such as the sulphuric, and the fat of the soap is thrown to the surface. But to detect this earth more perfectly, we concentrate the suspected water by evaporation, then add ammonia, or its carbonate, which throws down a precipitate, which we collect on a filter, wash well with water, and then boil it in a solution of pure potash for some time. We then decant off the potash ley, saturate it with muriatic acid, and pour carbonate of ammonia into the saturated solution. If a precipitate now falls, it is a proof that the water contains alumina, which may also be weighed.

The presence of iron in water is easily known by its inky taste, and by its striking a purple colour with the infusion of nutgalls, or with an infusion of tea; prussiate of potash strikes a blue, and sulphocyanate of potash a red colour with the peroxide of iron, but produces no sensible colour with the protoxide. If the whole iron precipitates when the water is exposed to the air, or when it is boiled, we may be sure it is in the state of carbonate, and therefore all protoxide. If it only partially precipitates on exposure to the air, or on boiling, part will be in the state of carbonate, and part sulphate.

Lead, as contaminating cisterns and pipe water, and often producing very direful effects on health, and even life itself, may be detected by sulphuretted hydrogen gas, which throws down a black precipitate. And on the converse, this gas is detected by a similar dark precipitate on the addition of a solution of sugar of lead. We have now noticed the

principal foreign ingredients that are found in water in a natural state, with a few of the ready means of detecting the nature and the quantity of earthy, metallic, or gaseous matters which it commonly contains, without going to the extent of the subject of mineral waters and their analysis, which are more an object of medicinal than hygienic attention. It is seldom that river or well-waters are free from some earthy impregnation, but if they are of a specific gravity at or below 1.002, the little lime, alumina, magnesia, or silex, will not render them unwholesome or unfit for culinary purposes.

Another subject connected with water, as tending greatly to promote the public health, and to which too little attention is paid in this county, is its employment for bathing. Where the sea is not at hand, nor any clear river or lake, it is very incumbent, for the promotion of physical health and vigor in a community, that artificial bathing-tanks and lodges should be provided for the body of the people, at a trifling expense, or free to the majority of individuals using them.

Fuel is another essential requisite, both for cooking and bodily warmth in any consideration of local climate and hygiene. A plentiful supply of wood, peat, or coal, is indispensable where many human beings are to be congregated together. Wood and turf can at all times be ascertained to exist or not, from an inspection of the surface of the country, but the existence of the more valuable fact of coal is not at all times so easily verified. Where it has not been previously discovered, its existence in the neighbourhood of any locality may be inferred, if not at once ascertained, from examination of the geological structure of the place. If it should be discovered, it will form a most important element in any locality, and would counterbalance much that might otherwise be reckoned doubtfully salubrious in the climate. A very slight acquaintance with a few facts as to the rocks and vegetable fossils which always accompany the coal formation, will place an intelligent observer in a position to settle this point, and I would advise all young practitioners going abroad to have a fair knowledge of this study, as well as of botany.

Wood forms the common article of fuel in many countries, and is not quite discontinued in this. It was the first article in ancient times, and its general use served to clear the native forests of the kingdom. Peat dried is still, in many parts of Ireland and Scotland, the only combustible used, both for culinary and other domestic uses. Wood and peat are both wholesome articles of fuel, but from the quantity of pyro-ligneous acid which they give off in burning, they are annoying if not hurtful to the eyes, and they injure the complexions of those exposed much to their smoke. From the quantity of this antiseptic vapour which they give off, their smoke is much used for preserving and drying hams and fish; and it also appears that

some creosote is at the same time engendered, which further adds to their antiseptic properties.

Warmth, combined with a due supply of fresh air, is so essential to the health of all residing in temperate and cold climates, especially during the winter, that many modes have been devised to ensure these two physical blessings in the most effectual and economical manner; but after all, open fire-places are found the best, though they are far from being the most economical. They radiate the most heat through an apartment, if properly placed, while they attract currents of fresh air from the doors and crevices of the windows and floors, but then they carry up the chimnies a great deal of combustible gases, unconsumed, in fact, wasted, which if ignited would give out a great additional supply of sensible heat; instead of which they are soon condensed by the cooler atmosphere, and precipitated as a noxious covering over the neighbourhood, and are very destructive to vegetation.

Stoves prevent the annoyance of smoke, are more frugal, and they heat an apartment very effectually, from the great radiating power of their metal, but the ventilation is very imperfect, and besides they produce a dryness in the surrounding air, which is very disagreeable and insalubrious, especially where people are subject to pulmonary weakness or disorder. A capsule of water placed on the stove does not altogether prevent these objectionable effects. Hot-air flues combine ventilation with warmth, if the air from the outside is brought directly into the place after being heated; but they require management. Steam tubes convey an equable temperature, but are not convenient, as they require constant attention to the heat of the generator being kept up. Perkin's hot water pipes promised the most perfect supply and easy management; but they have been proved to be liable to accidents, such as may occur in frosty weather, and from rupture of the pipes, so that the advantages derived from them are much counterbalanced by the care and risk attending on their use. The safest mode of using hot water, is that in use in many conservatories, where the water cannot be heated above 212° , but this is not conveniently done in dwelling-houses. Warmth is agreeable to all ages, but it is essential to the very young and the aged. In the former it promotes the natural tendency of capillary circulation and development, or what may be called the eccentric evolution of the infant. In the aged, it even supplies the place of food, for cold air throws too much oxygen or combustion on the lungs, and thereby produces more waste than the feeble powers of assimilation can supply.

CASES IN SURGERY.

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(Read at the Anniversary Meeting of the Provincial Medical and Surgical Association, Aug. 7, 1844.)

If scientific information is to be increased rather by the faithful record and accumulation of facts, than by ingenious theories; if it is on the careful observation and comparison of such facts alone, that we can found any just and useful reasoning by which we may be safely guided in the deduction of practical axioms—then may I hope that the following cases, shortly and simply related, without any desire to exaggerate their importance, to extenuate the errors or sources of failure in diagnosis or treatment, or any attempt to enhance the degree of success with which they were attended, can scarcely fail to possess some interest with the profession, or to supply now a guide and now a beacon to some of the younger of its members, in the treatment of similar cases of accident or disease.

It is easy for a practitioner to relate successful and striking cases, wherein his practical skill has appeared to himself at least, to have been exemplified in a manner at once grateful to his own feelings, and calculated to receive the admiration or approbation of others. But to relate cases which were less successful, or which altogether failed, and to point out with candour and unflinching fidelity the supposed sources of failure; to acknowledge errors in diagnosis, prognosis, or therapeutic practice, requires a firmer resolve and a degree of self-sacrifice at the shrine of science from which many shrink; and not a few, it is to be feared, if they do not glaze over their errors, and attempt to give them the hue and shape of virtues, at least think it no sin to pass them over in silence, although a candid avowal of them might not a little contribute to deter others from the same sources of failure.

Perhaps there are few practitioners who can look back without many misgivings as to the results of cases which have been submitted to their professional management, and who do not see reason to believe that other treatment than that adopted might occasionally have led to different and more favourable issues. Indeed, in the nature of things it cannot be otherwise, else in what would consist the value of experience, of practical observation, and matured reflection and judgment? If every man began practice with all the knowledge and practical skill which he is capable of acquiring, after long and careful perusal of the book of nature, we must necessarily infer that the whole scope of science has already been mastered, that no new fact remains to be developed, that the laws of diseased action, and the nature and effects of remedies, have been fully ascertained, that the truth of the axiom, "*Ars longa vita brevis*," has been reversed, and, in brief, that some royal road has indeed been found out, of discovering and conquering the "thousand ills that flesh is heir to."

It is in the spirit of these reflections, that I shall relate the details of some cases which appear to me to supply facts not unworthy of the consideration of the members of the Provincial Association. They will be selected from my case books, without regard to the order of their occurrence.