disturbance of the natural relation of its tissues are so extreme, that bloodvessels can no longer permeate its substance as cylindrical canals pervious to the blood. This mechanical squeezing of the divided utero-placental vessels continues until the fetus is expelled; passive contraction of the cervix then replaces the previous passive expansion, and in its turn is powerfully hæmostatic in preventing a recurrence of the hæmorrhage after the uterus has been emptied. This is the mechanism by which the prepartum hæmorrhage in placenta prævia, whether partial or central and complete, is spontaneously and permanently arrested.

ARTICLE V.—*On the Antiphlogistic Method of Treatment.* By HENRY VEALE, M.D., Assistant-Surgeon, Royal Artillery.

WHAT are we to understand by the term Antiphlogistic treatment?

Etymologically, it signifies that which is opposed to inflammation; but, as a technical phrase, it usually implies the employment of means for reducing the quantity and quality of the blood.

Formerly very little doubt was entertained as to the efficacy of such means, but in recent times the propriety of depletion in the treatment of acute inflammations has been denied by a large and constantly-increasing number both of physiologists and physicians. It is strange, indeed, that there should be a difference of opinion as to a matter in which the correct observation and interpretation of facts are all that is necessary for the discovery of the truth. The minds of men and their powers of observation are, however, so liable to be warped by the influence of preconceived opinions, that one ought always, before venturing to express a condemnation of their conclusions, to consider the various media, moral and mental, as well as physical, through which the facts themselves may have been regarded.

Thus, if we trace the history of medicine no farther back than the last hundred years, we shall find that the theories which, until recently, have most prevailed concerning the nature of inflammation, have all seemed to sanction and enjoin the practice of depletion for its cure.

Cullen, for example,¹ considered "a spasm of the extreme arteries supporting an increased action in the course of the same as the proximate cause of inflammation." He believed that at least in every considerable inflammation there was increased tension, tone, and activity of the whole vascular system, and that this condition was "most effectually taken off by the relaxing power of blood-letting." To diminish the action of the heart and arteries, and to take off the spasm of the particular part, were his chief indications for the employment of remedies which, whether diluent, refrigerant,

¹ "Cullen's First Lines."

sedative, sudorific, emetic, or purgative, were all, like bleeding itself, although not in the same degree, more or less depletive.

Hunter's¹ view of inflammation was somewhat different. According to his theory, there is in inflammation "either an increase of life or an increased disposition to use with more violence the life which the machine or the part is in possession of; and also there is an increased size of vessels, and of course an increased circulation in the part inflamed, and in the constitution in general."—"We find," he says, "from common observation, that many circumstances in life, as also many applications to parts, will call forth the contraction of the vessels. We are, from the above theory, to apply such means; and whatever will do this without irritation will so far counteract the effects." And again,—“The contraction of the vessels is produced in two ways: one by producing weakness—for weakness excites the action of contraction in the vessels; the other, by such applications as induce the vessels to contract.”—"The means of producing absolute weakness are bleeding and purging."—"The soothing [*i. e.*, the means of *inducing* the vessels to contract] may be produced by sedatives, relaxants, antistimulants, etc."

Alison,² writing nearly fifty years later, says, that "inflammation consists essentially in a local increase of a vital property of attraction existing among the particles of the blood, and between them and the surrounding textures, and with which other vital properties are connected and simultaneously excited." Of the remedies he considers that "the only one on which absolute reliance can be placed is bloodletting;" "the efficacy of which," he adds, "would appear to depend on two principles,"—"to which indeed the powers of all other antiphlogistic remedies may be ascribed; *first*, That it weakens the heart's action; and, *secondly*, That it causes a derivation of blood from the affected parts."

And Dr Watson,³ even in the last edition of his *Principles and Practice of Physic*, says, "Blood being the natural stimulus of the heart, we should deem it probable that the removal of a portion of that fluid would diminish the force with which the heart contracts; and as an inflamed part contains a preternatural quantity of red blood, and as (with the exception of resolution and mortification, which really are *terminations* of inflammation) all the *events* of inflammation depend upon the exudation of certain parts of the blood from its containing bloodvessels, we should be inclined, *a priori*, to believe that the amount of those exudations would be checked and limited by lessening the supply of blood to the inflamed organ, as well as by abating the force with which the blood reaches it. And we find it in fact to be so." "Blood," it is added, "forms the pabulum of the whole process;" and the conclusion follows,

¹ Hunter on the Blood, etc., pp. 334 and 335, *passim*; London, 1793.

² Outlines of Pathology; Edinburgh, 1843.

³ Principles and Practice of Physic; London, 1856.

that "the great remedy in acute and dangerous inflammation is bloodletting."

Other theories have been advanced at various times, and have appeared equally to support the practice of depletion; but I have quoted the above-named authors in preference to others, because they have been either the originators or the most commonly accepted exponents of the main principles on which medical practice has been based, at any rate in this country, during the last hundred years. It would be foreign to my present purpose to attempt a refutation of their doctrines in detail. I shall therefore assume that these are no longer tenable, referring only to the works of Paget,¹ Virchow,² Todd,³ Bennett,⁴ and Carpenter,⁵ as my authority for doing so.

But the question, as to whether in inflammation there is an increase or a decrease of the vital powers, is one of so much importance, when considered in reference to bloodletting as a therapeutic measure, that it may not be amiss to devote a little time to its further examination.

Although one cannot but acknowledge that Hunter was right in the distinction which he drew between the healthy and the unhealthy inflammation, it by no means follows that either the one or the other is ever of a *sthenic* character; if by the word *sthenic* there be meant an increase of the *vis vitæ*, acting either as a cause or as a concomitant of the process. Certain inflammations, in fact, are healthy or unhealthy according as the body in which they occur happens to have been in good health or bad. Thus the *simple* inflammations may or may not be healthy; but the *specific* inflammations, such as the gouty, the rheumatic, the scrofulous, the diphtheritic, the syphilitic, etc., are always more or less unhealthy. The former—*i. e.*, the healthy—tend to run a speedy course and to terminate favourably; the latter—the unhealthy—have a proneness to run on indefinitely, to impair the organism, and to end unfavourably; but in neither case can it be shown that there is an increase, or indeed anything but a decrease, of vital force. The transition from the healthy to the unhealthy inflammations is by insensible gradations, and, notwithstanding that the two extremes are sufficiently distinct, the difference between them is mainly one of degree.

Perfect health, it may be said, is that state in which the vital powers are at their highest point, and it implies an ability to perform with efficiency and ease all the various functions for which the organization of the individual may be adapted. This definition of health, although perhaps not unexceptionable, is still sufficiently correct for our present purpose. Health, then, as I understand it,

¹ Lectures on Surgical Pathology, edited by Dr Turner, 1863.

² Cellular Pathology, translated by Chance.

³ Clinical Lectures "On Certain Acute Diseases."

⁴ Lectures on the Molecular Pathology, in Lancet, 1863.

⁵ Principles of Human Physiology, 1856.

is something more than mere life—it is the perfection of life; and if this view of it be the true one, then any deviation from the condition which it involves can only be in the direction of the opposite state, viz., death—the cessation of vital power. Hence it may be inferred, that even the existence of inflammation in the body is a proof that the latter has suffered a decrease of its vital force; and this conclusion is supported by the fact, that such an affection renders the system unable to resist those predisposing and exciting causes of disease, which, under ordinary circumstances, it would sustain with impunity. It would also follow, as a necessary consequence, that the symptoms by which inflammation manifests itself, no matter what impression they may be calculated to convey to the minds of the unskilled, ought to be regarded as indications of diminished vitality, differing only in degree.

It is more than probable that, in considering the etiology of inflammation, systematic writers have not hitherto been in the habit of attaching sufficient importance to the influence of great functional activity as a predisposing cause. The liability to diseases of the thoracic organs in the inhabitants of cold and temperate climates, shows the effect of great and long-continued functional activity on the part of the lungs in predisposing them to inflammation; and the tendency to disorders of the abdominal organs in the inhabitants of tropical countries shows the same fact no less clearly. Excessive functional activity, or, in other words, the over-exertion of a part, necessitates indeed an increased degree of nutritive activity, from which condition to that of actual inflammation there is but a single step. But health is only compatible with a proper control over a due regulation and balancing of the nutritive process; the moment this control is lost there is a departure from the healthy state, and inflammation, as we call it, is the result. Mammitis, pneumonia, hepatitis, etc., are oftentimes examples of nutritive powers overtasked in consequence of excessive functional activity. In such cases there is nothing that can be considered truly sthenic:—the vital force is not increased; on the contrary, it is simply overborne.

The objections to the theory that the process of inflammation had as its concomitant an increase of the vital powers, did not fail to present themselves to the sagacious mind of Hunter. Thus, he observes, towards the close of his immortal work, “Whether the disposition for inflammation and the change produced in the blood arise from a real increase of animal life, or whether it is only an increase of a disposition to act with the full powers which the machine is already in possession of, is not easily determined; but it appears to be certain that it is either one or the other. There are some circumstances, however, that would incline us to suspect it to be the latter; because there is often inflammation when the powers of the machine are but weak, when it appears to be only an exertion of very weak powers arising from some irritation produced.”

In this passage, an increase of the vital *force* is evidently distin-

guished from an increase of vital *action* resulting from diminished power; and one cannot but feel surprised that the mind which could perceive so distinctly the direction in which the truth lay, should at the same time have entertained the notion that there was such a condition as that of a too perfect health. It is necessary to make another extract here, in order to show on what grounds the latter theory is based.

"I do not," he remarks, "look upon full health as the best condition to resist disease; disease is a state of body which requires a medium; health brooks disease ill; and full health is often above par. Persons in full health are too often at the full stretch of action, and cannot bear an increase, especially when diseased; and, as I before observed, it is a new impression on the constitution, and till it be in some degree accustomed to local disease, it is less able to bear such as is violent."¹

To any one who takes the trouble of carefully examining this part of Hunter's work, it must, I think, become evident that Hunter fully perceived the inherent weakness of this theory, and its opposition to the whole tenor of his observation and reasoning. Indeed, it is difficult to avoid the conclusion, that it was put forward in order to reconcile the practice of depletion, so universal in his day, with his entire conviction that "strength probably under every circumstance produces good results."²

Certainly, it used formerly to be the practice of surgeons to submit their patients to a course of purgation and low diet before performing any serious operations; but a more enlightened experience has fully proved that, in surgical practice, the theory that "health brooks disease ill," is entirely erroneous; nay, more, that it is the very opposite of the truth; and consequently we find that in the present day no surgeon ever thinks of adopting this practice. Where shall we now look for a man "in full health?" To the prize-ring, I imagine, if any where; but if we refer to the records of "*Bell's Life*," we shall find that Sayers and Heenan, being in the highest possible condition, or, in the language of Hunter, "in full health," and even "at the full stretch of action," recovered with extreme rapidity from the injuries which they sustained in their memorable conflict. The whole history of the prize-ring, of the stable, and of the cock-pit, is adverse to the theory that "health brooks disease ill." Men in the most perfect health, or "*in the highest condition*," according to the sporting phrase, recover "with wonderful facility from the effects of injuries, and their wounds heal very rapidly."³ The fundamental error, in fact, has consisted in the supposition that inflammation was attended with an increase of vital force. The terms "vital action," "vital activity," "vital powers," and the like, have often been used too loosely, and as if

¹ Hunter, op. cit., p. 233.

² Ibid., p. 228.

³ Carpenter's Human Physiology, 1856.

they were mutually convertible; whilst the outward manifestations of abnormal or "*increased*" action have been looked upon as proofs of an increase of vital strength. As Dr Carpenter observes, "Although it has been customary to speak of inflammation as a state of increased action in the part affected, of which increased action the augmentation in the bulk and weight of an inflamed part, and in the quantity of blood that passes through it, together with its high temperature and more acute sensibility, would seem to furnish sufficient evidence; yet all these signs are found to be deceptive when they are more closely examined; and the conclusion is forced upon us, that the vital power of the part is really *depressed* rather than exalted."

It seems to me that, in the controversy which has taken place on this question, too much reliance has been placed on the idea that there are sthenic and asthenic "waves of time," according to the picturesque expression of Dr Watson.¹ The statement of Dr Alison,² that "the symptoms and particularly the constitutional fever usually attending internal inflammations have undergone a very considerable change since the early part of the present century," however valuable as the opinion of an eminent physician, has been accepted, it is probable, more from deference to his authority than from regard to the facts themselves. If we were to take our opinions concerning inflammation and its treatment solely from the writings of Cullen, Gregory, Armstrong, Alison, Clutterbuck, Watson, etc., we should be compelled to admit that, from the time when Cullen wrote up to a very recent period, the sthenic type of inflammation continued to prevail; and, indeed, it seems difficult at first sight to resist the evidence of so many and such excellent observers. But we must remember, if we would seek to be impartial in our judgment, that there are authorities to be cited on the opposite side of the question. Brown, for example, although a pupil of Cullen, did not hesitate to proclaim a doctrine that differed entirely from that of his master. But there were circumstances connected with the career of Brown which prevented his contemporaries in this country from acknowledging his merits as a physician. Abroad he has been held in higher estimation; and it is to be hoped that his writings will before long assume amongst ourselves the prominence to which their unquestionable ability entitles them. As, however, the value of his evidence may still be called in question, I shall not lay any stress on it; and I may dispense with his testimony the more easily, because the writings of John Hunter can be adduced on the same side. The remarks made by him, now exactly seventy years ago, almost seem as if they had been written yesterday. "It is observed,"³ he says, "by some of the ablest physicians of this day, that the fever

¹ Watson, op. cit.

² Alison, Edinburgh Medical Journal, 1857.

³ Hunter on the Blood, etc., 1793, page 227.

called inflammatory is now not so common in this country as it was formerly represented to have been; that it is now seldom that in fevers they are obliged to have recourse to the lancet, at least to that excess which is described by authors in former times. They are now more obliged to have recourse to cordials than evacuations; and indeed the disease called the putrid fever and putrid sore throat [diphtheritis?] are but of late date."—"I remember when practitioners uniformly bled in putrid fevers, but signs of debility and want of success made them alter their practice."—"Whether the same difference takes place in inflammation I do not know, but I suspect that it does in some degree."—"I believe we have much less occasion for evacuations in inflammation than there were formerly; the lancet, therefore, in inflammations and also purgatives are much more laid aside."—"We certainly live now more fully than what they did formerly. We may be said to live above par. At the full stretch of living, therefore, when disease attacks us, our powers cannot be excited further, and we sink, so as to require being supported and kept up to that mode of life to which we have been accustomed."

It is almost incredible that these words, corroborating so strongly the observations of Brown, and written probably during the lifetime of Cullen, Gregory, and Alison, have never received the attention they deserve. It is evident that, if we may consider Hunter as a competent witness in this matter, an adynamic phase of disease prevailed whilst he lived and wrote; but if we believe this statement, we must disbelieve the assertion that Cullen and Gregory, and their disciples, were correct in their views, or in the practice which they adopted for the treatment of inflammations. Furthermore, if we admit this evidence of Hunter, and also believe, with Winslow,¹ Clark,² and others, that the human race is still undergoing deterioration, owing to the excesses and vices of civilisation, we must wonder how it happens that man still manages to live his "threescore years and ten;" for the present, "adynamic wave" seems to have lasted very nearly a century; and if we are to judge from the practice that is every day becoming more and more general, of "having recourse to cordials rather than to evacuation," it is still very far from being likely to give place to one of a sthenic character.

The advocates of the change-of-type theory appear to have ignored altogether the evidence of Hunter concerning the medical constitution, as it is called, of the time in which he lived; and therefore, until farther proof is adduced in favour of this hypothesis, we shall be justified in refusing to accept it. We may likewise be entitled to doubt whether the degeneration of the human race has not rather been a convenient theme for the sickly fancies of the poets than an actual fact; for such a continual process of degra-

¹ Journal of Psychological Medicine, July 1857.

² Treatise on Pulmonary Consumption.

dation as the poets have conceived, and many medical writers have really believed in, would, if there be any truth in Darwin's theory, have made gorillas of mankind long before now had it been really in operation.

Apart, however, from all theories as to the nature of inflammation, the practical question, "Whether the abstraction of blood in whole or in part opposes the process of inflammation," has yet to be considered. The advocates of the practice assert that nearly all the medical authorities, from the earliest times until the present, have treated acute inflammation by such means, and have approved of doing so; and this answer would seem almost sufficient to place the matter beyond a doubt; for it is not likely that the medical practitioners of all ages and of all countries should have been mistaken in supposing that bleeding afforded relief to their patients when suffering from acute inflammation. It is still less likely that those who have had experience of the remedy in their own persons should have been deceived as to the nature of their own sensations. In face of all the evidence on this point, I think it is impossible to deny that inflammation may sometimes be cured by bleeding. The theories that have prevailed at different times concerning its mode of action may have been erroneous, but the fact remains, and has yet to be explained.

That the curative effect of the remedy is not attributable to the removal of the corpuscular elements of the blood, nor of the fibrine, nor of its other constituents taken separately, has been sufficiently proved by the researches of Andral and Gavaret, Becquerel and Rodier, by Todd, Bennett, and others; and we are therefore led to inquire, whether the effect is attributable to the loss of blood *per se*, or whether there may not be some other element in the case which requires to be taken into consideration. Before entering directly upon this inquiry, however, I must beg to make a brief digression.

A riddle always appears a wonderfully simple thing when its solution has once been learnt, and so does any mystery of nature seem to be *after* it has been interpreted to us. What is there, for instance, more easily intelligible now than the law of gravitation, or than that of the correlation of forces? What more simple than the leaf-theory of Goethe, or more obvious than the circulation of the blood? And yet, for ages upon ages, men remained in ignorance concerning these matters, although constantly endeavouring to discover the truth. Now that we have learnt to admit that nature and not the physician cures disease as a general rule, we have devoted ourselves with more assiduity to the observation of her processes; and we are gradually coming to the belief that, for the cure of the vast majority of our ailments, we have only to allow nature to work without impediment. At first sight this may seem a very easy task to perform, but it is not so in practice, because infinitely more skill and more accurate observation are required *not* to interfere with the curative efforts of nature than to become

proficient in all the complications of any system ever yet propounded by man. We are only just now beginning, after centuries of distrust, to believe that nature's plan for the treatment of inflammations is generally the best, and that if we second her efforts in an intelligent manner, we adopt the safest course for our patients.

It frequently happens that we may see a law or a plan of nature more clearly manifested in the actions of the inferior animals than in those of man himself. It would almost appear as if the instinct of self-preservation were more forcibly developed in them than in ourselves. With all our "boasted civilisation," and all our recent progress in sanitary science, we cannot yet place ourselves on an equality in hygienic matters with our horses, our dogs, or our cats. These, like all other animals, are liable to inflammation, which we may observe in its simplest form when it occurs as the result of external injury; and what is it we find that nature prompts an animal to do when it has sustained a serious hurt which inflammation must follow? In the first place, it withdraws itself from the society of its fellows; it gives itself absolute repose both of the injured part and of the whole body; it abstains from food, but not often from drink; and if the wound be accessible, it licks the part constantly with its tongue. Observe the extreme care shown by dogs of the greatest pluck, dogs that have seemed almost insensible to pain whilst engaged in fighting,—observe the care they take afterwards not to move or to use the injured and inflamed limb, and then mark the wonderful rapidity with which their wounds heal. There is no depletion in these cases; there is nothing but the absolute rest which their seclusion, in whatever lair they may have found, gives to their nervous, muscular, and nutritive functions, as well as to the part itself. Probably, if man were to obey his instinct only when he had sustained a serious injury, he would act in a somewhat similar manner; but the solicitude of his friends and neighbours, and eventually his own excitable thinking faculty, are generally more than sufficient to overrule his instinct.

When once we have obtained a clear conception of the work we ought to do, we have already advanced a long way towards its accomplishment. The removal of the obstacles that intercepted our mental vision renders the task comparatively easy. As soon as we understand that our object in the treatment of acute inflammations should be not to exert a "sedative influence on the heart and arteries," not to render the blood less plastic—"less stimulating," as the phrase went, not "to cut off the supply of blood from the inflamed part," not to "empty its gorged capillaries," nor even to make way for the speedier operations of our mercurials and antimonials and cathartics, but simply to imitate nature's method, and suspend the functional activity of the oppressed part, then the means of doing so increase exactly in proportion to our knowledge of what its functions are. This would seem to be the true rational

medicine, having its basis on a correct interpretation of nature's mysteries: in other words, on physiological science.

In the management of any acute inflammatory disease,¹ from the smallest boil to the gravest inflammation of the heart, the lungs, or the brain, we find that nature is consistent in her plan. For all she prescribes *rest*, which she varies only in degree. The loss of appetite which so constantly attends acute inflammation, and which has often been supposed to be an indication for depletion held out by nature herself, I think we ought to regard as the strongest manifestation that she requires rest for a time, even from the task of converting food into blood. The danger to life would seem to be so great in such cases, that all her *disposable* forces, all her *vis in esse*, are summoned into the citadel, as it were, to guard it from the enemy who is seeking to obtain an entrance there. By and by, when she shall have gathered up all her *radical* strength, all her *vis in posse*, and the enemy shall have been thereby overcome, she will not fail to occupy her outposts again. The *pain* of inflammation is also to be considered as a signal for rest. Pain seems to be the means which nature employs in order to enforce the suspension of functional activity in an inflamed part; and the circumstance is sufficiently remarkable, that the pain of inflammation is generally most severe in those parts where rest is most easily obtainable. There is not much pain, for instance, in pure bronchitis or in pure pneumonia, and we know that the action of the lungs cannot be arrested for more than a very brief period without death as the result; but in pleurisy there is often intense pain, and the parts concerned in this case do admit of their functional activity being diminished. An inflamed joint, an inflamed bone, an inflamed finger, or an inflamed eye, are all intensely painful, and pain in all these cases leads to functional rest; but an inflamed liver, an inflamed kidney, and notably an inflamed heart, are not very painful, and in them we find that pain would not obtain rest. The pain of peritonitis and enteritis, again, does necessitate rest, and inasmuch as it does so, it serves a useful purpose; but then in treatment we must remember that "pain kills," it exhausts the vital force; and therefore our object should be to assuage it certainly, but to do so in such a way that the functional activity of the oppressed part may still be kept in abeyance. Opiates answer this twofold purpose, but it is necessary that they should be given in much larger doses than are usually employed. In the treatment of injuries sustained on the battlefield especially, I can assert, from a sufficient experi-

¹ It would be easy enough to give instances of inflammations that required nothing except rest for their termination in health, for most of the simple inflammations are of this kind; but it must not be supposed, from what has been said in the foregoing pages, that the specific inflammations require nothing else to ensure a similar result. On the contrary, any given specific inflammation may perchance need its special remedy or remedies, and it is in this respect that the preparations of the pharmacopœia resume all their importance.

ence, that their employment in this way is absolutely indispensable.¹

Returning now from this digression, we may resume the inquiry, whether the beneficial results of bloodletting are produced directly or indirectly; whether, in fact, it is the loss of blood that affords relief, or whether loss of blood is only a means of developing the conditions for obtaining it.

This question is by no means so easily answered as might at first be supposed; because, in almost all instances where depletion is effected, rest of the inflamed part, *i. e.*, a suspension of its functional activity, more or less complete, is also obtained. If it were possible for active depletion to be made without enforcing thereby a greater or less degree of this suspension of functional activity, the crucial test could easily be applied; but this not being so, we can only reason from probabilities. That the actual abstraction of blood is not essential may be inferred from the case reported by Dr M. Solon, and quoted by Dr Watson,² of erysipelas cured by a succession of fainting fits, without the loss of a single drop of that fluid; and I think it may be safely asserted, on the other hand, that loss of blood, without a suspension of functional activity in the part, would prove of little value. Let a man have a traumatic inflammation of the integument of his arm, for example, and let him, through sheer force of will, continue to use the limb, and thereby to enforce the functional activity of the inflamed area, and I think it will be generally admitted that no depletion which did not necessitate rest would cause the inflammation to subside. Then, again, all observers agree in stating that bleeding, to prove effectual in the cure of inflammation, depends more upon the manner in which it is effected than on the absolute quantity of blood taken away. The blood was to be drawn *pleno rivo*, the patient being in an erect or sitting posture. As Dr Watson says, "If you neglect these small matters, and make an insignificant slit in the vein, and suffer your patient to lie down whilst you are bleeding him, you will be obliged to take much more blood in the end; or you may drain him of his blood and of his strength by repeated bleedings of this sort, and make no impression after all on the disease."

I have already expressed myself ready to believe the statements of the older physicians, as to the relief which bleeding sometimes afforded, and I see no reason to suppose that similar results might not be obtained in the present day. There is no necessity to deny the facts as some have done, or to attempt to explain them away as

¹ In stating that these remarks were written prior to the publication of Mr Hilton's "Lectures on Pain and the Therapeutic Influence of Mechanical and Physiological Rest in the Treatment of Accidents and Surgical Diseases," I do not desire in the least to dispute that gentleman's claims to originality of thought and research on the subject in question. Notwithstanding the similarity of certain of our conclusions, the considerations which have led to them have obviously not been the same.

² Watson, *op. cit.*, 1st vol.

others have sought to do, if we admit that loss of blood causes a diminution or suspension of the functional activity of an inflamed part; and that it is capable of effecting either may, I think, be easily proved. "You see a person," says Mr Lawrence, "with his eye bright red and very painful; he cannot face the light, and tears gush out with great suffering if he attempt to do so. You bleed to fainting, and immediately the capillaries are emptied, so that the organ resumes its natural paleness; the pain is gone, the eye is opened without difficulty, and the full influx of light can be borne without an uneasy sensation. For a time the part has passed from inflammation to a nearly natural state."¹ But notwithstanding this relief the inflammation is probably far from being cured, for all the symptoms are only too likely to recur as soon as the circulation is restored. The rest afforded by the bleeding has not lasted long enough to allow of the nutritive activity recovering its proper balance. In some cases, it might happen that a single bleeding would give a sufficient rest to admit of recovery taking place; but in the majority it would be necessary to repeat the venesection; and oftentimes, according to the old expression, such a repetition would either, "*kill or cure*." Therein lay the danger, and the question arises, Does bleeding afford the best means of obtaining the rest that is required? Formerly it may have been, and probably was, the best, because it was the only one known; but now-a-days the case is altered. Knowing what we now know of the inflammatory process, knowing that it requires a well-conditioned blood for its satisfactory evolution, and that "the excitement of the circulatory system," the rapid and bounding pulse," "the redness, the swelling, and the heightened sensibility,"—all betoken diminished and not increased vital power; knowing all this, must we not ask ourselves, whether in abstracting not only so much by weight of the circulating fluid,—the "liquid flesh," as it has been called, but the richest and most highly elaborated part of it,—we are not paying too high a price for the benefit we expect to receive? Granting that we find it absolutely necessary to give rest to the labouring heart, lung, or liver, have we no other means of doing so than the abstraction of the *pabulum vitæ* itself?

The answer must now be made in the affirmative; for we have not only means as certain, but even more effectual and infinitely safer. Their action may not be so speedy, but they are less costly; and "slow but sure" is a quality far preferable in this case to the brilliant but uncertain.

Let us now consider and contrast the two methods of treating a case of acute inflammation,—of simple pneumonia, for example.

According to the ancient method the means employed were,—

1st, *Bleeding*: the effects of which were a temporary rest or suspension of functional activity, both of the inflamed part and more or less of the whole body, but, at the same time, a deterioration of

¹ Lawrence, Treatise on Diseases of the Eye.

the blood and a diminution of the vital power, which the occurrence of the inflammation had of itself shown to be already seriously impaired.

2*d*, *The administration of mercury*: which still further impoverished the blood, and thereby depressed the vital power without any compensation whatever in the way of rest.

3*d*, *The use of antimonials*: these afforded rest, but only at the cost of producing nausea and depressing the vital power. When given as sudorifics they perhaps acted more beneficially, as we shall see in the sequel; but they were very rarely indeed prescribed with this object only.

4*th*, *Purging*: this, according to the extent to which it was carried, impaired the quality of the blood, lowered the powers of life, and over-exerted the body, instead of affording rest to it. It must, however, be stated, in justice to our immediate predecessors, that they had themselves recognised, if not the injurious effects, at least the inutility of purgation as a curative means.

5*th*, *Prolonged abstinence from all kinds of nutritive food or stimuli*,—a measure that necessitated rest truly, but at the same time compelled the body to live on itself as it were, and thereby maintained and tended to increase the depression of the vital powers.

6*th*, *Local depletion*, by cupping and leeching, producing effects differing only in degree from those of general depletion.

7*th*, *Counter irritation*, by blisters and rubefacients, sometimes perhaps proving beneficial, but generally quite inadequate to change the action of an acutely-inflamed part; and in such cases becoming hurtful, by deteriorating the quality of the blood, and by exhausting the nervous system through pain.

There can be no reason to doubt that this method of treating inflammation was often enough successful, when carefully employed, to justify the belief that even recourse to it was better than no treatment at all; and there is every probability, I think, that if still adopted the results would be the same; but there is this source of danger inherent in the whole system, that its tendency is to diminish the powers of life, and to *kill* if it does not *cure*. Such a reflection should make us pause ere we sanction the use of such deadly two-edged weapons. Very few persons, indeed, could wield them with the nicety and dexterity necessary to do good; whilst the majority of us would be almost sure to strike beyond the mark, and to do harm instead.

Happily, a safer and more rational treatment is gradually but steadily gaining ground; but, in order to understand its application in any given case, we have first to determine what the functions are to which we propose to give rest.

Now the chief offices of the lungs are,—1*st*, To supply oxygen to the blood; 2*d*, To remove carbonic acid from it; 3*d*, To exhale watery vapour more or less charged with animal matter.

The demand for oxygen and the quantity of carbonic acid re-

quiring to be exhaled bear a direct proportion (*a*) to the degree of nutritive and formative activity in the tissues generally, (*b*) to the amount of functional activity of the nervous and muscular systems especially, and (*c*) to the greater or less necessity for maintaining the heat of the body by the internal combustion of carbon and hydrogen. Consequently, if we could "fix the state of nutrition," or retard the process of decomposition in the body, suspend all its nervous and muscular actions, and render unnecessary the maintenance of its heat by the process of internal combustion, we should give the lungs absolute rest, and place them in the conditions most favourable for recovery when inflamed; but unfortunately we have no certainty of being able to arrest the process of nutrition, without producing an injurious effect on the vital powers. So long as life remains this process must be carried on; and as the presence of oxygen is indispensable for its performance, and as this gas enters the body almost entirely through the lungs, absolute rest of these organs during life is impossible. Still, to whatever extent we can succeed in reducing the consumption of oxygen in the body, to the same degree we can suspend their functional activity; and as a general rule it may be affirmed, that the causes which bring about a diminished elimination of carbonic acid are a measure of those which render a smaller supply of oxygen necessary. The effect of a high temperature of the air in reducing the functional activity of the lungs may be presumed from the immunity from pulmonary diseases enjoyed by the inhabitants of tropical countries; and its influence in diminishing the exhalation of carbonic acid has been shown by Vierordt¹ to be so great, that between 38° F. and 75° F. the human subject experiences for every rise of 10° F. a decrease of two cubic inches per minute in the quantity exhaled. A dry state of the atmosphere also seems to cause a diminution in the rate of exhalation of carbonic acid. Thus Lehmann has shown, that "while one thousand grammes' weight of rabbits exhaled in *dry* air 0.451 gramme per hour at a temperature of 100°, they exhaled as much as 0.677 in a *moist* atmosphere at the same temperature."²

Absolute repose of the muscular and nervous systems, sleep, abstinence from solid animal or farinaceous food, and, contrary to what might have been expected, the use of alcoholic drinks under certain circumstances, also diminish the exhalation of carbonic acid; whilst their opposites, viz., exercise, either of the mind or body, want of sleep, a diet of animal or farinaceous substances, etc., tend to increase it. Again, it is a well-ascertained fact, that the lungs, and the skin especially, are able to supplement each other to a considerable degree; and that the kidneys, the liver, and the intestinal canal, are also capable, more or less, of performing the functions which, under normal conditions, are performed almost solely by the lungs; and it is reasonable to suppose that the more active these

¹ Physiologie des Athmens, 1845.

² Quoted from Carpenter's Physiology, 5th Edition.

organs are within certain limits, the less must be the amount of work required to be performed by the lungs.

Keeping in view, then, the two principles here indicated, viz., the reduction of the special function of the lungs to the lowest point compatible with the performance of the processes of life, and the substitution, as far as possible, of its subordinate functions by an increased activity of the skin, the liver, the kidneys, and the intestinal tract, we may, by the adoption of these two plans, and by their judicious combination, succeed in giving to an inflamed lung that amount of rest which is necessary for the process of recovery. Indeed, the fact is indisputable, that by this method, properly carried out, we actually do succeed in rendering pneumonia a much less fatal disease than it used to be when phlebotomy and general depletion were the measures commonly resorted to, or than it is even now found to be when treated by such means.

The correct treatment of acute inflammation of the lungs; then, consists in maintaining,—

1st, *A uniformly high temperature in the ward or sickroom* (say from 70° F. to 80° F.), and *as dry and pure a state of the atmosphere as possible.*

2d, *Absolute rest of mind and body*,—to ensure which the administration of narcotics and anodynes in large doses will often be found necessary.

3d, *Abstinence from animal and farinaceous food.*

4th, *The ingestion of cooling drinks*, saline or acidulous, according to the case and the desire of the patient.

5th, *The use of remedies that tend to increase the functional activity of the skin, kidneys, liver, and bowels*,—for which purpose the acetate of ammonia will generally prove sufficient, but a cholagogue cathartic may occasionally be required in addition, if the tendency to constipation be greater than usual.

6th, *At no very long period after the establishment of the disease*, two or three days at most, *the use of wine*, at first diluted and in small quantities, but increased both in strength and amount as the disease progresses.

7th, *A careful watching for the first signs of returning appetite*, when the sensations of the patient will best indicate the kind of food that will be most suitable. Most frequently the desire is first for soup, milk, or jelly; and shortly after this stage he will be able to eat, and will be the better for eating, animal food itself.

It is almost impossible to over-estimate the importance of maintaining the atmosphere dry and pure, but especially at a *uniformly high temperature*. Attention to this point should never be omitted. By night, and all night as well as during the day, a bright clear fire should be kept constantly burning in the ward when acute inflammation of the thoracic organs has to be treated. It is far safer to rely on this measure alone, in such cases, than to employ any of the drugs contained in the whole pharmacopœia, but it is to be feared

that the excessive zeal of our would-be sanitary reformers is often only too successful in frustrating it. How constantly may we observe, during the winter, patients affected with inflammation of one or other of the thoracic organs exposed to a temperature of 50° F. at best by day, and to one as low as 30° F. or 40° F. by night! It is not in country districts alone, or in the miserable garrets of the poor, that such things are to be seen. Foul air unquestionably is only another name for slow poison, but it is probable that very cold air produces effects quite as injurious on the sick and the sleeping. Nor should we ever relax our vigilance in maintaining absolute repose of the mind in all dangerous and acute inflammations. In this respect the human subject should be reduced as nearly as possible to the condition of the brute creation; nay, even to that of the simply organic or vegetative, as distinguished from animal existence. It is needless, however, to say that this would be wholly incompatible with the plan of treatment which we have seen reason to condemn. What with leeching, cupping, blistering, purging, nauseating, salivating, and the like, which constituted the orthodox treatment of our ancestors, and perhaps is even still practised somewhat too often, how was it, or is it, possible for the nervous or even the muscular system to obtain repose?

On the other hand, it must be confessed that the rational method often fails to impress the *profanum vulgus* with the belief that sufficient is being done. "Do you call *that* treatment?" said an elderly medical man once in the ward of an hospital where it was attempted to be carried out. "According to my opinion," he added, "that is no treatment at all." And to those who happen to be profoundly ignorant of physiological and pathological science, it certainly has not the striking effect which is produced by a copious bleeding, *coup sur coup*, by a constant retching, by a violent purging, or by a profuse salivation. It is even doubtful whether it gives to the patient himself that degree of confidence in his doctor which the sudden and marked though temporary and fallacious relief of a copious bleeding so frequently affords. Whatever vividly impresses the imagination of the patient or the bystanders, even though it cause intense suffering, is pretty certain to receive credit for a large share in the cure. The popular mind puts immense faith in cupping and blistering, for instance: such measures satisfy it that "something is being done" at any rate; and as the popular mind is generally very ignorant, and believes without reasoning, charlatans make use of their knowledge of this weakness for the furtherance of their own low designs. Charlatans deserve punishment; but no reproach can be too severe, no contempt too profound, for the conduct of those who, without being charlatans, endeavour to prostitute to base purposes the means which science has consecrated to the alleviation of human suffering.

I have dwelt at the greater length upon the treatment of acute pneumonia, because it was necessary to illustrate by an example the

principle which I have sought to display and to enforce ; but it would be obviously impossible within the limits of this paper to show its application to the treatment of all the acute phlegmasiæ. Such a task would almost necessitate the compilation of a treatise on the whole science of physiology and pathology. Sufficient, however, has been said, I trust, to justify the following conclusions:—

1st, That, according to the present state of our knowledge, the natural and proper method of treating acute inflammation consists in diminishing or suspending the functional activity of the affected part.

2d, That depletive measures only prove beneficial in proportion to the extent in which they fulfil this indication ; that the employment of them is extremely hazardous, besides being unnecessary ; and that their curative effects are always uncertain.

3d, That the means to be adopted for the treatment of acute inflammation, although always the same in principle, should be varied according to the functions of the parts concerned.

ARTICLE VI.—*Case of Enlarged Ovary ; Tapping through Vaginal Wall ; Recovery.* By J. BRISBANE, M.D., Galashiels.

THIS patient first came under my care during the autumn of 1860. At that time she was suffering from a severe attack of intestinal irritation, consequent on neglect of the bowels. By means of enemata, purgatives, opiates, etc., this was removed, and she recovered satisfactorily. I cautioned her shortly afterwards against similar neglect. Whether from misunderstanding my injunctions, or from a too eager desire to carry them into effect, instead of using gentle laxatives, she had recourse to drastic purgatives. After taking a dose which purged her very severely, she felt something which she described differently at different times. At one time she described it as “if something had been torn in her inside ;” at another, as “if something had passed suddenly from her right to her left side.” Ever after this she stated that “there was something there (in the left iliac region) which should not be.”

Shortly afterwards I lost sight of her, and in the meantime she got married. Sometime after this she again came under my care. At that time she complained of uneasiness deep in the left iliac region, with a sense of fulness and stretching, and slight pain on pressure. On examination per vaginam, considerable fulness was discovered in the region of the left ovary. After being under treatment for some time without any decided improvement, she was seen by Prof. Simpson, who suggested tincture of iodine locally, and a salt of iron internally. By means of these, and afterwards iodine of potassium internally, she improved somewhat, and I again lost sight of her for nearly two years.