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Professor Drummond in "Natural Law in the Spiritual World"

The Theory of Counter-irritation.

A very capable modern author has said that nothing is more needed in our day than the rejuvenescence of the commonplace. The remark is full of meaning to the student of medical science. The pressure on our life is so great, the demands on our time and understanding so severe and constant that we have scarcely any leisure to think for ourselves, and we are in such hurry to advance towards things new and as we hope better, that we have no time to carefully observe what is actually taking place before our open eyes nor for any retrospect however profitable that also might be. There is moreover reason to believe that we are too ready to disregard and depreciate old and old-fashioned means and methods, merely because they are old and familiar, and not because we have satisfied ourselves that they are wrong. This is not a commendable spirit. The truth should never be too old, or too commonplace, for our regard. The sum of our solid medical knowledge is not such, nor is great, that we can afford to throw over established ideas merely because they are old. There is indeed a strong presumption in favour of an idea or theory, or practice, in the fact that it has survived long enough to have become commonplace.

Schlegel's History of Literature.

The Koch cure, and the Maltby cure, and the many forms of loud-mouthed shameless quackery can never become commonplace. Such are always unnatural and delusive, and therefore short-lived, or are fraudulent and soon found out. Then again there is the immense loss resulting on the neglect or disregard of the historical continuity of scientific effort and discovery which comes of the too great anxiety to be original. Nature is never original in the sense of being exceptional or making a 'startling new departure; and' If it were possible by a single arbitrary effort to break the thread of hereditary thought to which we are inseparably connected by language the consequence would be only destructive.

Counter-irritation is a familiar expression almost, if not altogether, commonplace. It has held an important position in our medical philosophy and speech, and it is even now with us in active use. We think that in it we have a light to direct us on certain safe lines for the effective treatment of disease, and the range of its application is very extensive. It is therefore very interesting, and it is desirable, that we should endeavour to know what it means, and what we mean by it.

Like all words that have a long history this of Counter-irritation has altered very much from its first meaning. It is indeed evident that in an inquiry of any great range over the history of scientific evolution, as it bears on

medical science, and especially on the interpretation of pathological phenomena, one of our first and most important difficulties will be met with in the seemingly simple matter of words and terms. The great mass of the most fundamental terms even now in active use, are very old and have had such a long life of vicissitude and various change that it is only with difficulty we can learn what their true meaning and scientific value is. They came into existence no one knows when or how, away in the indefinite past. We can get somewhat near to the first ideas they embodied through their etymology, but beyond that they record nothing of their so very interesting life story. Some have changed exceedingly from their first signification. Words like Apoplexy, Epilepsy, and Melancholia have not a trace of their first signification in the present usage. Some again like Disease, Health, Cure after a complete cycle of changes in which they appeared in various meanings, have come back nearly to their first positions to embody remarkably clear and intelligent conceptions. Others again have wandered for ages all over the earth, changing in signification with every doctrine, and still have not taken a definite meaning. Of these the term Counter-irritation may be taken to be a good example. Although it is not very old, unless we can extend it back

to the metasyncrosis of Thessalus $\epsilon\alpha\tau\phi\omicron\upsilon\epsilon\kappa\eta\varsigma$ and the metaporáporosis of Galen, it may with perfect safety be said that it has had thousands of different meanings in its time. One might almost risk the assertion that it has a thousand different meanings in our usage of today. When a discussion on the subject took place some years ago in the medical journals, Dr Anstie who took a leading part had to confess that "He was fairly startled by the wide divergence of views that were shown to have been all along concealed under the external appearance of agreement in the orthodoxy part" and if we may judge from our text books we are not much clearer on the matter now.

In the very inception and origin of the expression it seems to embody a theory, or perhaps two, or perhaps three theories. There is plainly implied in it that irritation is the cause of inflammatory disease, and that inflammation is always an evil; and it is further implied that this form of remedy acts counter to or against the diseasing cause to undo it or to prevent its operation, and so to bring about a healthy state.

Regarding the first assumption, that irritation is the cause of inflammatory disease, whether it is right or wrong, or from whatever

point we may view it there cannot be any serious objection to it. We must accept it, that there is a cause or causes somewhere at the commencement of disease inducing or producing the diseased state. It makes no difference at this stage of the inquiry what name we give to that cause, and perhaps the more indefinite and comprehensive we make it the better. Whether we look on it as the *Mortal Soul* of Plato, the *ψυχή* of Aristotle, the *πνεύμα* of Galen or the *Archæus* of Paracelsus; or as any other form or expression of the *Excitable*, *Irritable*, or *Sentient Ens* it is all the same. Altering the name can in no sense or degree alter the thing named. And if the ancients thought well to irritate, or to stimulate and provoke this imagined first cause, this *impetum faciens*, in order to arouse it to a sense of the danger of disease invading its habitation; or to allay it, or soothe it when it was presumed to be in troublesome mood, we need not be too severe in our judgment; for we must not forget that our own medical science of the present day uses this same word-irritation as in some way expressive of the cause of inflammation, and counter-irritation as a curative means; but with less courage, or honesty, or logic than the ancients, we omit

to say who or what is irritated. A strumous or gouty knee is waiting for a trifling irritation to set up a violent process of disease. A slight blow or exposure to cold will do it. Now we may from our point of view and with some propriety, look upon the blow or the cold which is the immediate cause, as the irritation. But we can readily see that this does not cover the whole cause of the disease which lay farther back in the life-conduct, or even in the heredity of the individual. A similar blow or exposure would not affect a healthy knee. We therefore see that it is not quite correct to say that the blister, or other counter-irritant we may use in such a case, acts counter to the irritant part alone of the complex cause, but counter as we esteem it, to the whole inflammatory process following on the disposition and on the irritation. In the fullest sense it is a counter-inflammation we set up. The modern theory then of irritation as the cause of inflammatory disease is too narrow, and is not much more serviceable in practical application than ancient forms of the theory, even if we take them to have been all wrong. The effect of this is seen very plainly in our modern medical literature. One authority explains the physiology

Practitioner June 1869
do Sep: 1879.

and purpose of Counter-irritation at great length in that pseudo-scientific form of language which enables some to write bulky books without saying anything in particular. He gives no light on the matter. Another explains that various theories have been advanced, but he does not venture to say which, if any, is right. Another has the courage to say that we have no satisfactory theory. Dr Risdon Bennet not long ago said that "The action of counter-irritants although undoubtedly useful in pain and in causing absorption of chronic exudations is little understood and belongs to the most mysterious department of therapeutics," and Mr Chiene "Counter-irritants are as yet little understood... our very ignorance regarding the action of a blister coupled with the frequency with which we use it makes it one of the most interesting questions that can occupy our attention as thoughtful physicians and surgeons." A peculiar and very interesting effect of this uncertainty is that "some therapeutists have of late been disposed to question the value of counter-irritants on the theoretical ground of inability to explain their mode of action (Quains Dict). The remedy, or let us rather say the mode of treatment, has fallen into disrepute not because it has failed as a remedy, or

mode of treatment but for the very peculiar reason that we do not understand and cannot explain how it succeeds; for it is allowed that not infrequently it does succeed. Ringer in his Therapeutics gives scores of diseases in which Counter-irritation may be, and is, applied with advantage. Gowers in his treatise on nervous diseases repeatedly asserts the extreme value of counter-irritation. He says, in diseases of the spinal membranes, "rest in importance to rest is counter-irritation"; and again regarding inflammation of the spinal cord: "There is however one therapeutic measure of unquestionable value in the treatment of the later stages, and that is the repeated application of the mild cauterizer". I could refer to not a few cases in my own knowledge in which the immense value of Counter-irritation was altogether beyond doubt. The testimony of experience throughout the whole history of medicine is absolutely conclusive on the value of this mode of treatment, when rightly used. There can however be no doubt that Counter-irritation may do harm. It is a powerful instrument for evil as for good. We do not understand its operation and we are therefore not safe in applying it indiscriminately, so, and therefore

"Essays Medical and Experimental"

conscientious men say that we better not use it, but try to get on without it. This is a very commendable frame of mind, if it were not quite so exclusive. We lose all the good that admittedly may come by this treatment because we do not know how to avoid the evil that may come by it when used wrongly - that is, when, and where, it ought not to be used. This follows directly on our not knowing how it acts. On the other hand if we can learn and know how it operates we shall at once be put in safe possession of a proved powerful means of treatment, free from all risk of danger coming by it. What we have to inquire, and to determine if we can, is, why Counter-irritation at one time serves a good purpose, and at another does harm. In saying this we say nothing new. Dr Thomas Percival writing in 1772 says "Though blisters were known to the ancients they did not come into general use till the beginning of last century. But though blisters are now almost universally applied, and though experience hath ascertained their utility in various disorders the theory of their action, as well as the mode of their operation, is yet undetermined and a subject of litigation. Hence arises that diversity

of opinions concerning the diseases in which they are indicated, the time of their application, and the parts to which they should be applied. Nor can we ever hope for uniformity in this respect among physicians either with respect to their opinions or their practice, till a juster idea be formed of their mode of action deduced from experience and an attentive observation of their effects on the human body. When this is accomplished, a system of rules may be laid down for their right and advantageous application". It will be observed from this, that in respect of this matter we have made very little advance, for these words are as true and appropriate at the present time as they were, when written, 120 years ago. And it will not be difficult to see that until the need here so well expressed shall have been satisfied, while we use counter-irritants for any purpose or however successfully, we are open to the sharp but pertinent remark of Richerand that the physician who uses Counter-irritation in the treatment of disease is like a blind man with a stick - hitting at one time the disease, at another the patient.

ὅσα σίδηρος ἴηται οὐκ, πῦρ ἴηται. Ἀρῆ viii. 6

Georgiès I, 88.

This is not the place to investigate fully the history of the idea of Counter-irritation throughout its whole course in the medical literature of the past. His desire is to aim at the practical aspect as much as possible. It is without doubt very old - we cannot know how old. The Cautey was in familiar use in the days of Hippocrates, and from his time to ours whatever sect or theory came or went the scar of the red hot iron, or of some of its kin, may be traced with little interruption the whole way down. "Nullum remedium prestantius est igne" seems to have been the first and most abiding article of medical faith in all times. There is no remedy or means that has been so universally and continuously adopted by all nations as this of cautey or irritation. What Virgile declared of the fruitful earth would seem to have been specially appropriated to the human body

"Omne per ignem

Eccoquiter vitium atque ecludat inutilis humor".

As Moxa, plaster, or blister or in some other of its many forms it has been found in common use all over the world and away into remotest antiquity. Some have thought that there is an attempt to philosophise on the matter in the forty-sixth of the second Book of the Aphorisms Δύο πόνων γινομένων ἄμα μὴ κατὰ τὸν αὐτὸν τόπον ὁ σφοδρότερος ἄμαυροι τὸν ἕτερον.

We may take it as certain that to the early imagination, the pain was the disease. It is so indeed in no small

Celsus. Quoted by Lettsom. Oration 19 Jan 1778.

degree to the clearer conception of our own time. So the removal of the pain meant the removal of the disease; and there could not then, as there cannot now, be any objection to this way of looking at the matter, so long as pain is removed or undone by the removal or correction of the cause and not by suppressing it with narcotics. But having regard to the physiological attainments of Hippocrates' time, and of considerably later times when it was accepted that "*Morbos vero ad iram deorum immortalium relatos et ab iisdem opem posci solitam*", perhaps it would be better to look on this observation as a simple empirical, or rather say natural, discovery in which there was no such philosophical intention as has been so assiduously given it down even to our own day. It is only a few years since a well known and competent man took his stand on it against all comers in defence of the practice of counter-irritation. This is not a safe position to take up, either historically or philosophically. We have seen people with much less knowledge and thought than Hippocrates is accredited with cure the toothache by rubbing the cheek with nettles, and we have seen a by no means ineffectual remedy for rheumatism got from an acrid species of *Ranunculus* made into a poultice and applied to the painful joint. It would be just as easy to trace the rational origin of Hippocrates' treatment by cautery as of these.

The idea and the practice "grew" and that is all that can with safety be said about it. Celsus opens his First Book De Re Medica with the assertion "Siquidem etiam imperitissimae gentes herbas aliisque prompta in auxilium vulnerum morborumque uocant".

There is much that may rightly be described as instinctive in the beginnings of medicine. To this earliest morning then of our science, which Lettsom has described as the stage of Empiricism from Necessity, the practice of Counter-irritation may be referred. But even if we know that in its origin it had no theory and that in its long history it was united to sometimes strange and sometimes contradictory theories, and that even now it has no reliable theory to appeal to, still we cannot easily or safely deny that there is some good meaning and merit in a method so long-lived, so universal, and so instinctive, if we can only understand it. But in those early days "There was no theory of vital action, and of the nature of disease, or of the modus operandi of medicines; and medical inquiry was confined to the empirical search for substances possessed of curative properties", and any knowledge of even so much seems to have been an hereditary, entailed, and probably somewhat limited property. When Menelaus was wounded before Troy

Henry's Maid RR IV

Machaon "Esculapius' son" after sucking the wound clean

"Then medicines wondrously composed, the skilful leech applied

"Which loving Chrion taught his sire, he from his sire had tried

There is a most interesting thread of continuity running through the slow evolution of medical philosophy; and it always has reference, more or less remotely, to this idea of a special activity determined by, or through, some cause the nature of which was not known. We might perhaps by the help of a good deal of fanciful interpretation be able to indicate the thread of this idea from Hippocrates down to the middle or end of the 16th Century when Broussais holds that the first conception of Irritation, as we understand it now, had origin. But to do so would not be pertinent to the present purpose, and it is doubtful whether it would be a very profitable task. It was not till after the discovery of the circulation that any definite or practical theory of Irritation was possible, and not till then therefore could there have been any theory of Counter-irritation. There cannot be any doubt however that to the Archæus of Paracelsus and especially to the elaborate rehabilitation of it by Van Helmont we may directly and easily trace much that is current with us even now in word and phrase. The human mind is not always patient of abstract ideas. It prefers a solid

Oxford 1664.

concrete entity if that is at all available. The Archæus was "an actual entity endowed with a personality, an intelligence, and the most lively emotions", as Dr Anstie describes it. The quaint translation of Van Helmont's works by Constable gives so graphic a portrait of the Archæus and so true a statement of the medical mind of the time that it may be quoted

"But since every corporal act is limited to a Body, hence it comes to passe that the Archæus, the Workman and Governour of generation, doth cloathe himself presently with a bodily cloathing; For in things fouliſied he walketh thorow all the dens and retiring places of his Seed and begins to transform the matter according to the perfect act of his own image. For here he placeth the heart but there he appoints the Brain, and he everywhere limiteth an immoveable Chief dweller out of his whole monarchy according to the bounds of requirance of the parts and of appointments.

At length that President remains the overseer and inward Ruler of his bounds even untill death. But the other floating about being assigned to no member keeps the oversight over the particular Pilots of the members being clear and never at rest or keeping holiday".

Simpson W, philo-medico-chemie 1665

We cannot do better than conjoin with this his definition of Disease. "A Disease is a certain Being bred after that a certain hurtful strange power hath violated the vital beginning and hath pierced the faculty thereof and by piercing hath stirred up the Archæus into Indignation, Fury or Fear." A commentator states the case clearly and briefly thus. "The Archæus therefore is that in us which first feels the pestilential ons and becomes infected therewith. Diseases to this author were contia realia which entering the body cause the controlling spirit to become enraged and to send into the parts an irritating ferment which calls the blood into them - and so causes inflammation. This is not a bad theory by any means, and a good deal might be said in its favour in our advanced day. There is reason however to doubt that it in any way influenced the use of counter-irritation even if we credit that, in some sense, it afforded a theoretical basis for the practice; and the same may be said of most of the theories of the seventeenth century; a century which was by far the most prolific in medical theories as in other philosophical speculation.

It is impossible to doubt that Haller's idea

of Irritability was in some sense related to the use of external irritants in the practice of the time, but as already hinted it is almost certain that the theory in no way effected the practice, so we pass it over. Brown also and his Excitability we should pass over if that were possible, but the teaching of this remarkable man touches the subject in discussion at one or two important points which we cannot well disregard. In order however that too much importance may not be attached to words it may be here pointed out that the Excitability of Brown, the Irritability of Winter and Haller, and the righteous wrath of the guardian Archæus when "after that a certain hurtful strange power hath violated the vital beginning and hath pierced the faculty thereof," are one and the same thing. They are all *It's*, fanciful conceptions of undetermined cause, and the one is just as good and as helpful as the other. They are all in the same line and the distance between them is very small, as, to the rest, it is only a change of words meaning essentially the same thing even if undetermined. Brown's fundamental teaching that almost all diseases have their

origin and principal cause in a general debility of the organism, touches very closely on the view of Counter-irritation which is to be submitted in this Essay, as does also his splendid generalisation that "Predisposition to disease and Disease are one and the same thing". It is well therefore to recur so much. But the principal reason for introducing him here is that his teaching without doubt led to the invention of the "contra-stimulus" of the Italian Schools in which his doctrines took such deep root. The Contra-stimulus is in idea closely akin to Counter-irritation. It is indeed very difficult to distinguish between the irritant and the stimulus as used in these and other theories of that time. The contra-stimulant was designed to have an effect on the tissues contrary to what a stimulant had or would have. But the stimulant in its origin and earlier signification meant a grad ὀττιμῶς and between a goading or pricking and an irritation it was not easy to draw the line. The Contra-stimulant acting within had a similar purpose and effect to the Counter-irritant acting from without. It was perhaps about this time that the word Counter-irritation had origin.

Broussais' theory of disease, mainly directed to "escpion" that of Brown, took irritation to be at the bottom of every morbid condition, and held that this irritation always resulted in an increased flow of blood to the part. This was inflammation, and the seemingly reasonable way to act in such a case was if possible to prevent that flow of blood and that inflammation. An external irritant would serve this purpose. It would determine the flow of blood outwards and away from the diseased direction in which it might be going. It would stop the inflammation. Let it be called Counter-irritant therefore, and it was so.

John Hunter's extraordinary power of common sense observation, and almost insatiable desire to explain everything could not miss the interesting difficulty presented by this matter. He at once saw the difficulty and took it up. He saw the difference between, or perhaps we better say the tending divergence of, the stimulus and the irritant and he defined them in a way that we cannot take any exception to. He limited the meaning of the stimulant to whatever produces sufficient excitation to promote some natural function; the irritant on the other hand results in an excitation

"A Treatise on the Blood, Inflammation and Gun-shot-Wounds"
1812.

which promotes an unnatural action. We cannot say that Hunter's logical faculty or power of definition was his highest, but this seems to be a very good and useful distinction and perhaps is as nearly as possible the meaning we attach to the words now. This will become plain from the observations of Dr Chambers, Dr Anstie, Dr Ross, Dr Lauder Brunton and others which will follow.

Hunter too had his Archæus only he called it the "vital principle" and the "sentient principle". It is, as usual, only a change in name, and not in the thing meant. We are not however concerned with these terms at present. They have been gathered to their ancestors, the long succession of which has never failed from the very earliest time down to this day when the only representatives are the malicious microbe called pathogenic, and the "hetero-morphous morbid principle" of Count Mattei.

Though so far as I know the expression Counter-irritation is not used by Hunter it is distinctly and frequently implied by him as for instance in the following. - "The mode of cure by an irritation different from the disease, appears to increase the disease, but by destroying the first mode

of action it produces another disease, and which more easily admits of a cure than the first." He is not partial to this form of treatment but prefers bleeding, depressant medicines, soothing applications, and cold. to contract the blood vessels and so to cure or to mitigate the inflammation. He surmises, and I venture to say rightly, that irritant and hot applications increase the disease, so he cannot see how they can do good. He admits that counter-irritants may cure inflammation by repulsion, sympathy, derivation, revulsion and translation, and fortunately he admitted also that "the operations denominated by these terms all belong to the same principle in the animal economy"; but as to what that principle is he declares "we are totally strangers". That the matter is of great importance he expressly states - "It is not to my present purpose" he says "to go into the different effects of this principle, although I must own it might be as useful a part of the healing art as any and even more for it is probably the least known as being the least intelligible, and therefore the more use may be derived from its investigation". Hunter was a giant.

To see him labour through the vile bog of interminable nonsense that flowed from the humoral theory is grand but pitiful. It is sad to hear him after his strong struggle, on getting his foot on solid ground declare that "why inflammation of any kind should cease after it has once begun is difficult to explain or even to form an idea of, since yet we have no mode of counteracting the first cause or irritation." It is sad, but there is hope in it; a man could not stand long in that position without getting light on the difficulty. It is difficult indeed to explain for the best of reasons that no inflammation ever was or can be stopped, but through death, except by removing the first cause, or by allowing or assisting the purposeful intention of the process to work out the beneficent end for which it is, by nature established. There is abundant evidence in Hunter's later writings that he was brought to recognise this fact - the most fundamental as it is by far the most important in all our knowledge. There can be no doubt that to Hunter must be referred the most acceptable explanation we have of the action of counter-irritants. We may find on examining it closely that it is no explanation at all; but

as an old friend that has done long and learned service we must view it kindly. In the introduction to his Treatise on the Blood Hunter makes this statement. "As I reckon every operation in the body an action, whether universal or partial, it appears to me beyond a doubt that no two actions can take place in the same constitution, nor in the same part, at one and the same time; the operations of the body are similar in this respect to actions or motions in common matter. It naturally results from this principle, that no two different fevers can exist in the same constitution, nor two local diseases in the same part at the same time". From this quasi-philosophical "principle", the expression Counter-irritation derived a most respectable and learned significance. It alone, in the whole wide range of medical means, stood out clearly on a scientific foundation with a pat philosophism always ready at hand to sustain its position. There cannot be two actions in the same part at the same time; so, and therefore, if there be an inflammation deep down in the tissues let us by counter-irritation start one on the surface. We shall "destroy" the deeper action, and we have in place of it

a superficial inflammation which we can deal with easily. That is an excellent way, simple and seeming very reasonable. Still "it is difficult to explain". Why was this action in the deeper tissues begun? What have we done that it should now cease? "It is destroyed". But what is destroyed; is it the first cause, or the action, or what? Have we killed the Archaeus or the Micrococcus, the heteromorphous morbid principle, or what have we done? It is surely difficult to explain. But the principle remains that there cannot be two actions in the same part at the same time, and to inquire why it is so would only result in unsettling the orthodox scientific mind, and perhaps also the orthodox practice of physic. And further, if by this means, we cure the disease what matters the explanation. Let it alone

It is no part

Of prudence to cry down an art

And what it may perform deny

Because you understand not why. (The Hudibras)

This would leave us exactly where we began, using strong means for all cases without discrimination, doing good sometimes, and sometimes harm - the blind man with his stick as before.

Note to p 25 at x. "Everybody knows or ought to know that there is a periodic mania for the introduction of ancient practices and obsolete opinion. The rabies of the anti-contagionists comes regularly round after a term of years, and so it is with many other things especially the employment of the Actual Caustery. Reason knows this measure had a pretty fair trial and had not been abandoned till after its merits had been tested by a long and dreadful experiment. Gentlemen wd however nowadays persuade us that a red-hot-iron is a pleasant thing enough and by no means attended with those disagreeable sensations with wh^{ch} its application is associated in the eyes of vulgar prejudice. Mr. Rymer has for some time past made much use of the Caustery as a Counter-irritant in that Scrape-goat the "Morbus-Coracis", but published results from such unmeaning terms are not worth one farthing."

Medico: Chirurg: Review 1830

The teaching of Van Helmont was said to have controlled the 17th century - Hunter may be said to have controlled the 18th, and in no small degree the 19th century also. So far as regards our subject it may be said that it made but little progress from Hunter up to within the last twenty years. Still sporadic efforts of more or less interest have always been directed to this question since Hunter's time which, if we were to pass over, would destroy the feeling of continuity that is desired to be maintained in this essay. Besides, we should miss many interesting opinions some of which our broader knowledge has come to confirm, and others of almost no less interest which our knowledge has not yet enabled us to refute conclusively, though they are doubtless erroneous. We shall then follow the idea from the beginning of the present century; but only touching lightly on a few of the most important references.

There can be no doubt that the use of the Caustic and of the stronger irritants was largely in abeyance in the end of the last, and well into the beginning of the present century. It was not long so. Baron Larrey early in the century stoutly asserted the value of Moxa and Cupping and gave abundant proof of their use and benefit. He maintained that they acted as "Revulsants" drawing off or inviting the humors" and so doing good. His translator Dr Duglison does not appear to have been too much bound in to this view

"On Artificial Eruptions" 1822.

but held the opinion that "It is not to credit, but to well-founded scepticism that we are to look for those improvements in Medical Science which may enable us to treat diseases philosophically."

Edward Jenner while in pursuit of his favourite theme thought that Nature indicated a process something like revulsion in the cure of disease. "Whoever has observed the deranged state of health where vesiculated eruption has been called into action by an effort of Nature, must have seen how often they arrest the progress of the original disorder, and may we not from this infer what appears to me to be a pretty general law of Nature that she often gets rid of diseased actions affecting vital organs by exciting eruptions in other parts not vital." The stated observation is true and easily accepted, but the interpretation and the inference is not so. The vesiculated eruption does not arrest the original disorder but continues it, and brings it to its natural termination; and if a vital organ is diseased Nature's only way of curing it is to restore it to the healthy state. This fanciful and vicarious transference of disease has nothing at all of proof to support it. The only explanation of this kind ever given that could be with any measure of reasonableness entertained was that based on the humoral theory of disease which Jenner refuses. "They (the humoralists) maintained the metastasis of disease, but instead of arguing

"A Treatise on Moxa"

that eruptive affections were exchanges of diseased action they consider them to be drains by which certain humors existing in a depraved condition of the circulating fluids were carried off". We can understand something of the views he condemns and can see some reason in them, but we cannot understand nor have we any knowledge of Exchanges of diseased action.

James Boyle writing in 1826 gives very remarkable results from the use of Moxa, but of so mild a form that he does not consider it deserves to be called Counter-irritation. He imagines "The caloric dissolves deposits, and stimulates parts, and excites the absorbents without (being strong enough to) increasing the action of the arteries. The very rapid manner in which chronic swellings have been observed to subside after two or three applications of Moxa, scarcely causing discoloration of the parts acted on, decidedly proves that increased absorption is the cause of such change. It appears under these circumstances that the heat is just sufficient to dissolve parts recently organised from deposition of coagulable lymph or morbid thickening of cellular substance without affecting the circulation". It is not necessary here to discuss the physiology of this very fair and honest interpretation, as we have advanced very much since that time. We may see later on that his practice had good

"On the Application of Lunar Caustic" 1826

Practitioner Jan: 1869

reason as well as good results to commend it.

About the same time Dr John Higginbottom wrote a modest little book which is "presented to the medical profession with very humble pretensions on the use of lunar caustic in the treatment of Inflammations, wounds, and ulcers. He used the caustic over a very wide range of practice, and his own judgment of this treatment in 1809 is "I may venture to say we have no therapeutic agent so safe, so powerful, or efficacious as Nitrate of Silver in subduing external inflammations when properly applied. It has been invariably successful in my hands for the last forty years". This must be considered excellent testimony, from so unassuming yet so exceptionally competent a man. He does not venture on a theory but his correct observation of fact, and the rightness of the lines of practice he draws from them are none the less valuable and helpful. He says "If Inflammation be established it is increased at first by the caustic. But if this inflammation be not severe and if the Eschar remain adherent, all inflammation, both that produced by the application and that existing previously entirely subsides. When the previous inflammation is however, considerable, the application of the caustic would induce vesication and it should in such case be avoided".

Swedish Encyclop: Art: "Counter-imitation"

Do

Art "Derivatives"

This is exceedingly interesting and it will be referred to again. It is not necessary to believe that lunar caustic has any special qualities or merit which other counter-irritants have not. It is not in the remedial means that the merit consists but in the suitability or sufficiency of the physiological action which it determines. Through the whole long line of such means as are variously named Stimulants, Rubefacients, Irritants or Escharotics the principle is always the same essentially, and only varies in the intensity of its action and in convenience of use.

Dr C. J. B. Williams in 1833 writes "Nature not rarely cures disease by Counter-irritation; and it was probably from her example that Art first adopted the practice." We may perhaps accept this much, but it is all the light he gives. Dr William Stokes in same place makes one or two points that are of interest. "We must admit," he says "that external derivatives have two modes of action, one derivative the other stimulant". But this is exactly what we cannot admit, and what it is not necessary to admit. We refuse the derivative interpretation for the present entirely. He makes this very important observation "We often find in cases of intense irritation of internal organs that blisters will not vesiculate the skin, but that as soon as the disease has

been modified they will produce their usual effect. Can this be explained by supposing that in consequence of the intense inward determination the surface has lost a portion of its vitality? Yes, that is quite true, as will be more fully shown further on. It is also certain that blistering does no good in such a case, but will do much harm if it can divert the natural determination into other channels than where it is greatly needed. Nature prevents this however till the disease is "modified", that is, partly or altogether cured. and then the blister may have its worse than useless "usual effect".

In 1838 appeared "Counter-irritation its Principles and Practice" by Dr A. B. Granville F.R.S. Its theme is to prove that "It is not impossible without the aid of internal medicines and without having recourse to poisonous ingredients as counter-irritants, instantly to suspend and in the majority of cases permanently to remove by means of external remedies every degree of pain however acute which shall depend on morbid affections of the nervous and muscular system or of the circulation". This vulgar is certainly a large order. The meaning of it will however be readily understood if we know that the object of the book is not to decide any truth or knowledge but to laud certain "lotions" of which he alone knew, and would keep the mystery. He was a man of some ability however, and even if his "lotions" prejudice him exceedingly, we must admit that he recognised two important essentials in the successful use of counter-irritants.

He saw that the support of the constitution was the first essential, and that counter-irritation "excites the vitality of the part to which it is applied."

In 1842 Dr Gully published a small volume on "The Simple Treatment of Disease" with the apologetic motto Μέγα βιβλίον μέγα κακόν. It is a very good little work giving an excellent resumé of the history of medical science by way of Preface. His interpretation of Revulsion is very broad, comprehending almost all the old means and methods which we now class under Counter-irritation. He says "Revulsion then in its modern meaning may be defined to be that process by which the vital condition of a part is changed, either by exciting a new action in itself or in some other part. In the former case a changed degree of vitality and amount of blood is supposed in the part itself; in the latter, the same effect is produced by setting up a counteracting degree of vitality in some more or less distant portion of the system. Further although Nature sometimes effects a revulsive action for herself for her own salutary purposes, the awaiting for which constitutes the expectancy of medical treatment, the object of the treatment by revulsion is to anticipate, nay often to thwart, the natural progress of the diseased symptoms; to force as it were Nature into the channel of relief which

Art shall dictate. Thus the practice in question necessarily implies the employment of artificial means. It necessitates action in lieu of expectancy, and hence has been called by the French La Médecine agissante in opposition to the plan treated of in the last chapter la Médecine Expectante. It leaves nothing to the powers of the economy, but trusts entirely to the efficacy of remedial agents, and it supposes the tendency of all disease to be towards the extinction of the individual. Change in the vital condition of a part would seem here to mean a diminution of vitality and amount of blood; but as this is the most common interpretation of the action of counter-irritants it need not be discussed till later. To anticipate Nature is a very difficult undertaking, to thwart Nature is we venture to say a very foolish undertaking, even if it were possible which we doubt very much. That Art should force Nature out of her own channels into channels that must therefore be unnatural would not appear to be a very wise proceeding, and the unfortunate element in the matter would be, that while Art might prescribe the treatment Nature would dictate the result. Any theory or practice that would leave nothing to the powers of the economy goes too far - it need not be reasoned with. And again the view that disease makes for the extinction of the individual is by no means certain.

Lancet 1844 Vol 1 "On Counter-weights"

We prefer the directly opposite interpretation, and not altogether without reason. Sydney Smith wrote to Miss Martineau "What an admirable provision of Providence is the gout! What prevents human beings from making the body a larder or cellar but the gout. When I feel a pang I say 'I know what this is for; I know what you mean. I understand the point!' and so I endeavour to extract a little wisdom from gout". That is the view of disease which we prefer to take - that it is more for the saving and restoration of the individual than for his destruction. We are compelled then to refuse "La Médecine Agissante" if this is the philosophy in which it has been established.

Dr J. C. Atkinson in 1844 enunciated a "doctrine" as he called it "entirely dependent on physiological action and on its law that the greater the irritability of the constitution the greater will be the sensibility of capillary cutaneous surfaces under the influence of counter-irritation." If this means that the skin is more sensitive as the body is in a feverish state perhaps it may be accepted; but if it means that a part which is inflamed responds more readily to irritation it cannot be accepted without considerable

Expt. board of Therapeutics

Lancet 1844 Vol. I.

reservation. It has been constantly observed that it is very difficult, when it is not quite impossible, to blister or irritate the skin over deep inflammations. Dr Stokes indicated the right cause of this as we have already seen. Dr Lauder Brunton tells of a case in which repeated ordinary applications of Iodine liniment had no effect on a gouty joint but when the application was by accident upset over the joint it had its effect at once. The writer has blistered a gouty toe six times in one day with a violently strong blistering fluid without producing the slightest sign of vesication and without any relief to the sufferer. It may be said that he would not do so now. The meaning in the matter was quite plain - so long as the inward determination towards the centre of inflammation was stronger than could be produced on the surface, the current of blood and energy could not be drawn outward, and it is well it was so. When the very angry toe and the whole limb was put into hot water the pain was soon relieved and it was not long till it ceased altogether. This effort was not to force or to thwart Nature but to assist the natural dismission, hence the much better result.

In the same year Dr Henry Bennett wrote

35

"The phenomena to which Counter-irritation gave rise in the human economy may be now considered as tolerably well known. There are few questions connected with medicine which have been more elaborately investigated than the doctrine of counter-irritation. But there is still much it must be confessed that remains obscure. They are generally supposed to act in a twofold manner; first, as derivatives by the local inflammation they create; second, as depletives by the serum which they abstract from the economy. There can be no doubt of the correctness of these views which are universally adopted by the pathologists of the present day." This is somewhat difficult to understand. How intelligible views that are without doubt correct, can yet be obscure is not easy to comprehend. The two ideas of derivation and depletion will be rejected. Dr Bennett was under Velpeau at La Charite where blisters were used "very large" and very freely, and he says he never saw evil but much good come by their use - which we may think was a better result than was merited by the line of treatment. It is not necessary to discuss whether blisters should be used "very large" from a rigid unreasoning rule of practice. Blisters should not be used

Lancel Dec 1852.

at all when they are not necessary and even then as small as possible - that is, of course, as large as the case requires but not larger.

In 1852 Dr Hughes Willshire read a paper to the Medical Society of London on "The Modes Operative and Value of Suppurative Derivation as a Therapeutic Agent". He took a lesson from Nature, exactly on the lines of Edward Jenner already referred to, and was much in favour of the use of the stronger Counter-irritants and regretted that their use was "going out before a painless therapeutic". As far as can be gathered from a rather defective report, his fundamental idea was that there was a morbid humor in the system which could be "derivated" and withdrawn by means of an artificial suppurative process such as Nature resorted to in some diseases. This has always been the grosser way of interpreting the humoral theory into seeming harmony with recognised practice. It appeals to the understanding of "such as are of weaker capacity"; and there may be a very small element of meaning in it, but it has done infinite harm. The discharging of a morbid essential of disease through the skin by means of irritant "remedies" is not worth discussing. The only interest it has or can have to honest men is how to stamp it out: for it is on this

Lanert 1854 Vol II

wretched and fraudulent basis that the charlatan quack builds his hope and his fortune. Mattei made his "pile" out of his "heteromorphous corruptive elements" and St. John ~~son~~ out of his "acid humors", and their loathsome kin are as busy as ever they were. So long as we are without a scientific, natural and simple theory of disease so long shall this pest be the hateful complement of our profession, and the abiding infliction of gullible humanity.

Dr W. C. Denby in 1854 wrote on "Antistasis or Counter-action". He makes a new departure but as will be observed it is only another change of name. "There are," he says, "two grand modes of antistasis which Nature adopts to preserve and restore health viz Elimination and Vicarious Action. Antistasis is the opposite of Metastasis which merely implies the transmigration of the same special action or quality from one locality or tissue to another often of more importance, as from joints to pericardium; whereas antistasis implies the development or spontaneous establishment of another action on a remote and usually less important tissue. Metastasis is aggravating; Antistasis is remedial" Nature certainly does adopt the grand mode of elimination to preserve and restore health, but whether this elimination is an Antistasis

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we cannot say. As to vicarious action it is a very peculiar idea altogether. If a part is diseased it is not easy to understand how the institution of disease in another part will cure it. It is a very common occurrence that inflammation ceases in one part when it has begun in another; and it has been frequently observed that the oncome of a new disease seems to cause a previously active disease in another and perhaps remote part to cease. But is our reading of facts and our interpretation correct. Is it always because of the later inflammation that the earlier ceases - does the one disease stop the other. And even if we must allow that they stand to each other in some degree as cause and effect, we must still ask if the one can rightly be esteemed to be the cure of the other; and whether we are acting reasonably and rightly in imitating this, that we consider to be a natural curative method? To answer these questions fully would take up more space than can rightly be given here. We may say however that the later action is the cause of the cessation of the earlier, because the organism can only efficiently perform one duty at one time, and it will always attend to the more urgent first.

We also venture to say that there is nothing of a natural curative intention to be seen in the sequence of these events, and that we are therefore wrong to imitate the process in our treatment. Any theory of metastasis or antistasis implies the entity of disease, and we cannot afford to reason with that assumption.

It was in May 1858 that Brown Sequard delivered his remarkable lectures on the nervous system to the Royal College of Surgeons. He introduced an entirely new element into the physiology of counter-irritation and seemed to have raised the question on to a much higher platform than it had previously occupied. The nervous system had not been taken into account in studying or explaining this subject up to that time; but Sequard's demonstration of the laws of the reflex action of nerves came into the problem at once. He states the case thus: "When we wish to produce a modification in the condition of any organ we must apply the means of irritation that we prefer to the parts of the skin or mucous membrane which have the most evident nervous relation to it. In most cases the parts acting with greatest power upon

another are those which receive the nerves from the same segment of the cerebro-spinal axis. If we wish for example to act on the kidney the skin of the abdomen in its upper part is the best for the application of any kind of irritation. Do we wish to act on the eye in case of amaurosis due to insufficiency in the amount of blood the irritant should be applied to the supra- or infra-orbitalis nerve. If the amaurosis coexist with hyperaemia the irritation of these nerves must be avoided and the means of revulsion ought to be applied to the back of the neck so as to act on the spinal cord, and through it by the sympathetic nerve which has on the eye an influence entirely different from that of the trigeminal.

It will be noticed that he speaks of the irritant and that all idea of the counter-irritant is dropped. This was made necessary by his new theory.

It is now over thirty years since these lectures were delivered, and though many competent men have in that time directed no small effort to the subject it cannot be said that the expectation which arose from Brown Sequard's discovery

has been adequately, if at all realised. The nervous element which comes so very much into the present day interpretations of disease is extremely elusive and unsubstantial. When we think that we have hold on some solid fact - behold a "neurosis" - perhaps the most "nervous hypothesis" of disease ever imagined. That the principle of nervous reflex action is a factor in the mechanism of irritation is almost certain, but that it is the principal factor, or even a very important factor has not yet been proved. So far as we know the introduction of this element into our knowledge of the processes of irritation has not been of any practical advantage. It has not made the slightest difference in our methods of treatment, nor has it brought any greater degree of certainty into our results.

A very interesting volume on The Renewal of Life by Dr J. Chambers appeared in January 1863 in which, what appeared to be new theories of disease and of counter-irritation were given. These were followed by a good deal of free criticism and comment, most important among which, was that of Dr Lionel Beale. He assailed

Chambers' whole position, and this led to an interesting little duel. Briefly, Chambers' opinion was that "Disease is a deficiency of action, and partial death; and that every treatment and aid to cure is but a means towards the renewal of the measure of life that has been lost." This is a most excellent theory, exactly to a shade the same as John Brown's of which we have already expressed acceptance. It is so philosophical, comprehensive and simple that we doubt if it can ever be improved upon. He seems to have entertained the ordinary views of counter-irritation up to a certain point. He states the opinions then held as follows "counter-irritation substitutes one disease which is less dangerous and powerful or whose disorganising tendencies are temporary for another which may be dangerous or painful and tends to destroy life". It is not clear that he departed from this position himself but he gave it the colour of his theory by showing that even thus viewed it ministered to the renewal of life. evidently by reason of its depleting effects. He even goes so far as to say that the withdrawal

British Medical Journal

of blood from the body ministers to the same purpose though he admits that "this is difficult to understand" which it certainly is. We gladly accept his theory of disease and believe that if he had anchored himself to it he would have cast more light on this subject than he can be said to have done. The only point worth recording which he contributed was that "the acceleration of circulation by counter-irritants results in absorption, on the well known principle that endosmosis increases with increased motion in the fluids".

In the following month, Feb. 1863, came Beale's uncompromising assault. He altogether denied the validity or usefulness of Chambers' theory of disease, and he denied that the interpretation of the action or intention of counter-irritants given by Chambers rightly represented the views of the time. "I have always been taught", he writes, "that by counter-irritation we seek to establish an increased action in one tissue or organ for the purpose of diminishing an increased action which is taking place in another tissue or organ the performance of whose functions is of great importance to the organism". He

then, after explaining the pathology of Inflammation, proceeds to give his own conception of the action of a counter-irritant as follows:—

1. It excites the centre in which afferent nerves are implanted and it is possible that the calibre of the small arteries to the mucus membrane (and other parts) may be diminished in consequence.
2. In consequence of the contraction of the arteries the walls of the capillaries would be relieved from the pressure of the blood, and provided their elasticity was not permanently impaired they would recoil and the blood they contained would be drawn on to the veins. The effusion of fluid would be diminished. The cells would increase more slowly and time would be allowed for the production of formed material (cell wall) around each.
3. Crude materials in the blood may be taken up by cells which are multiplying with abnormal rapidity in any part of the body. So the skin cells being, under counter-irritation, overfed and active may separate from the blood materials which would otherwise form the pabulum of pus cells &c. and therefore the evil consequences of inflammation.

British Medical Journal 14 Mar 1863
and 4 Apr "

are diminished.

It is not long before Dr Chambers appears in order "to give the Professor of King's College a considerate answer". In justification of the rendering he gave of counter-irritation and which Beale condemned he quotes Pereira not as an authority in lieu of argument but as an authoritative historian; and Pereira's definition is "The production of an artificial or secondary disease in order to relieve another or primary one." By this and by other means he plainly makes his position good, and when he turns on Beale's own theory he simply revels in its ruin. He works out an unanswerable *reductio ad absurdum* by setting the doctrinaires at one another. "Rokitansky thinks that 'irritation of the sensitive nerve centres causes antagonistic palsy of the nervi vasorum'. Dr Beale thinks it makes them contract! Dr Headland thinks the effect of blisters is to draw off the attention of the nerves from a morbid part; Dr Beale thinks it draws it on!" - and so on, and he sums up "For my own part I think that when we talk about stimuli, irritation, attention &c we are using the language

Paul F. Medico-Chirurg. Revue Apr: 1868.

of allegory and had better give it up".
Dr Beale has done his duty and served his
profession honourably and well, and it
is no disparagement to him if we are
compelled to say that Chambers came out
of the duel more than victor.

It has been an object in this essay not to
go outside English works for reference but
the following by Dr C. Naumann of Leipzig
may be excused as it is in one or two
points important. He asserts that he proved

1. That the therapeutic effect of cutaneous
irritants is brought about by reflex action.
2. A strong irritation diminishes the heart's action
3. A weak irritation increases the heart's action
(a strong irritation has same effect - at first)
4. The place of application makes no
difference in the result.
5. A powerful irritation reduces the
temperature remarkably (preceded by a rise)
6. In some the effects are marked, in others - as
in the asthenic - little or none.
7. The amount of irritation must be regulated
to the circumstances to get the best results.

These statements can be confirmed by experiment
only, so they cannot be discussed; but they
shall be taken as proved so far as they may
come into the argument.

B. M. J 7 Nos. 1868

Br F. Medico. Chirurg: Rev: July 1863.

Dr Geo. Johnson in 1868 speaking of Counter-irritation says: "In my judgment a very common mistake is that of applying strong irritants so as to influence the skin in the early stage of acute inflammation of the viscera or their investing membrane. It should be borne in mind that the circulation through the vessels of an inflamed part is more or less impeded, more or less stagnant. If then in a state of acute pleurisy or pericarditis we excite inflammation in the skin over the chest the result is the opposite to that brought about by local bleeding, cupping, or hot fomentations. For whereas by these means we divert blood from the deeper tissues to the surface the effect of an inflamed patch of skin is through the arterial connections to throw the blood back on the parts beneath". He looks to depletion for his good results. To empty the gorged vessels of inflammation is always the object. We do not admit the correctness of his interpretation of the action of the blister.

A very important anatomical fact may be recalled at this point, the knowledge of which might have saved not a little of what has been said and written on Counter-irritation. Sir Wm Turner in 1863 published a valuable paper showing that he proved by injection

" a very complete series of anastomosing arteries between visceral and parietal branches of the abdominal Aorta." Yet not one of those men who took part in the controversy on the examination of which we are about to enter knew anything about this discovery in 1869 and following years. The British Medical Journal in 1874 knew nothing about it for in a leading article it remarks " Johnson and Simon have suggested the existence of this arterial connection" It only shows how easily and how soon facts of first importance may go out of sight and remain unknown. Johnson not only suggested, but actually proved this arterial connection in the case of the Mammary artery which supplies the pericardium and integuments of the heart. We think it was Ludwig who showed that the skin over the loins could be injected from the Renal artery. The intercostal arteries supply both skin and pleura. It is well known that the blood supply to the skin over and about joints is intimately and directly connected with the circulation of the joints themselves. Mr Simon also owns that this is the most important element in the interpretation of the action of counter-irritants. All this, and the general law which it virtually proves

49

is very interesting⁴⁹ as will be seen from what is to follow

We have now to consider the most important discussion that perhaps ever took place on this subject. It was commenced by Dr Houship Dickinson and Dr Anstie in the end of 1868 and beginning of 1869 and was continued for several years. In the St George's Hospital Reports 1868 Volume III Dickinson's first paper appeared. He assailed the practice of Counter-irritation with evident relish and with the clear intention of giving the tradition and the doctrine no quarter. Paris stated the rationale of the practice to be that "In all inflammatory affections of the internal organs a blister placed on the contiguous surface affords great relief not only by the discharge it occasions but by a transference of the inflammatory action to the surface"; and Headland that "A powerful impression on any surface of the body seems to be capable of arresting and diverting as it were the attention of the system and thus for a time of checking the morbid process". He sets himself to demolish these views.

"To suppose that excoriations of the surface of the body in themselves trifling can produce deep seated alterations in unconnected though neighbouring organs; to imagine that bedaubing

the chest with Tincture of Iodine can modify the course of tuberculous disease in the apex beneath; or that a superficial vesication can promote the restoration of a hepatised lung - are views founded probably on no better reasoning than that which ascribed a formation the result of profound geological changes to an artificial modification in the surface of the neighbouring soil". It is to the logic of Texterden Steepie and the Goodwin Sands he here refers. He does not accept though he does not attempt to refute Hunter's "Contiguous sympathy" of parts, but he accepts it by inference for he assails "those who have superseded an apocryphal creed in which antipathy has taken the place of sympathy - which asserts that a superficial inflammation tends to counteract a change of the same nature in deeper structures". After a long and careful review of the several channels by which counter-irritants can act - vessels - absorbents - nerves - and continuity or apposition of structure - he sums up thus :-

"Although in certain specific diseases the morbid action sometimes transfers itself from one place to another we cannot expect such a transference except in disorder.

which, like Measles and Scarlatina, depend upon a circulating and erratic poison. And even under these circumstances we can rarely, if ever, produce artificially the desired transfer.

A local application has a local action. It warms or cools, soothes or stimulates, or produces its appropriate effect be it what it may upon the tissues which lie within the short range of its immediate influence. If the skin be made to pour out a serous discharge the serum may be withdrawn from a neighbouring accumulation. But we have no knowledge which will warrant us in ascribing any remote or indirect remedial action to the escoriations and other local inflictions which have been practised under the idea of counter-irritation. We have no reason to suppose that we can, under any circumstances, lessen an internal inflammation, by exciting inflammation of the superincumbent but disconnected skin. Unless there be some great undiscovered law of which pathology shows no trace and of the existence of which clinical experience has given no proof we cannot hope for benefit from Counter-irritation. We may therefore cease to apply irritants to the skin of the head in disturbances of the brain, to the back in affections of the spinal

Lancet

52

corn, to the chest in diseases of the lung; and in general, forbear to apply remedies to parts which have no direct vascular connection with the structure diseased unless the remedies are of such a kind and of such magnitude as to bring the whole system under their influence".

Dickinson in this paper exposed himself to retort by denying the actuality of experience - for experience is entirely against him. He also assumes too much - that things are not because he does not know them to be so or because they are not known to be. These very things have come into our knowledge since - were indeed in our knowledge at the time he wrote. His reasoning is not always careful, still there is a good honest ring in his work.

In February 1869 Dr Anstie published a lecture on the same subject. He compliments Dickinson on his courage and on the substance of his paper; and declares that he, Anstie, entirely agrees with him having entertained similar views and written them so far back as 1861. He ridicules the idea that counter-irritation can affect the deep or internal structures, for example in Pneumonia or Peritonitis. In fact

Lancel. Mar 1869.

the whole leading idea of counter-irritation is a relic of notions belonging to times which were antecedent to the birth of scientific physiology. It is simply shaking a red rag at the 'demon', and if not that - What?

He denies much, if any, advantage on the "vascular theory". The "nervous theory" he allows if we happen to put the blister in the right place - only. The "stimulation of the absorbents" may be admitted, but the effect is likely to be bad, not good - by reason of absorption from the wound we have made. He is altogether against strong counter-irritation, and prefers anything short of that to be named Stimulant. "The popular use of the term Counter-irritation is thoroughly bad, and it is not a mere negative fault, but a positive mischief." He allows just a possible benefit to it as a stimulant, but condemns the whole theory.

An interesting correspondence followed on Anstie's paper. John G. French F.R.C.S. accepts the beneficial results but explains thus; "It is effected by the corresponding diversion caused by the reparative processes of the new injury. So the point to study is what is the reparative process peculiar to each remedial injury." John Hunter said

Lancel. March 1869.

Lancel. April 1869.

something similar to this, but probably for different reasons and with a different intention.

Mr. Sumpter M.D. wrote "I now believe that blisters do immense good by diverting the patient's attention from the internal organ or part affected". This suggests the influence of the mind over the body and points towards faith-healing. We are not at all opposed to the opinion that very great good can be effected in the treatment of disease by influencing the mind favourably. The physician who does not recognise this, or knowingly disregards it is placed at great disadvantage. It may however be doubted if any competent man ever does or can disregard so important an aid to the successful performance of his duty. It cannot be denied that counter-irritants may serve no small good in this way; but it must be remembered that any good effect they have in this direction arises from the reasonable belief in their efficacy which long experience has taught.

Dr R. B. Painter would propound defences. "I wish" he says, "to put in a plea in favour of a time-honoured practice." He makes five points in favour of the practice:—

20 March 1869.

1. Congestion and Inflammation through defective nerve force may be undone by stimulating the peripheral nerves.
2. In inflammation in one part may by vicarious action cause another to cease.
3. New action set up by an irritant may break the continuity of morbid nutrition - as a bad habit may be broken by a sudden necessity or shock.
4. The artificially produced discharge may carry off the peccant humors.
5. The products of inflammation may be absorbed by reason of the stimulation.

It will be observed that all his points are merely possible and hypothetical; and that he offers no proof for any of them. But as they all have met us already in various forms we need not now consider them.

The best result of the discussion up to this time however was that it attracted the attention of the late Dr James Ross. In a note to the Lancet he said that he had advanced the stimulus theory of counter-irritation even in his student days. In May of the same year 1869 his pamphlet On Counter-irritation was published. This was certainly and by far the most competent and effective effort ever directed to the question up

Compare Hunter p 21 at foot

to that time, and perhaps nothing better if anything so good has appeared since. It will therefore be excusable to pay special attention to it.

The first position he takes up is thus stated.

"I have cautiously employed counter-irritation in the first stage of inflammation and seen it employed by others, but I never saw a single case in which the first stage of inflammation was followed by health; the invariable result has been the progress of the disease into the second stage. It may therefore be laid down as an empirical law that when counter-irritation is employed in the first stage of inflammation it has a tendency to develop the second stage, and has also a tendency which is not manifest on all occasions to extend and aggravate the disease".

We must give closest attention to this statement. The most important thing of all to observe is that the inflammation according to this view is a disease, and that the disease is an evil which it is most desirable to arrest by any or every means. But, and surely this also is important, he never saw inflammation cut short, not even by counter-irritants.

In this intensely significant observation he comes into line of thought with other men who have taken no mean place in the history of medicine. Hunter said it was difficult to understand how inflammation could be cut short without removing the first cause. Astley Cooper said it was not desirable, even if possible, to stop inflammation and Hughes Bennett that an inflammation once established cannot be cut short. What then can be the object of our treatment? We acknowledge it cannot be cut short, yet we try to do so and fail - fortunately perhaps. Ross himself five years later says "In short the counter-irritation has not checked the diseased lung but merely assisted it through its natural progress. Is not this the right interpretation of his rightly observed fact that counter-irritation on all occasions extends and aggravates the disease. We certainly think so and our effort shall be to prove that it is so.

This second position which is not less interesting is thus stated, "All are agreed that the beneficial action of counter-irritation is most manifest in the second stage. It promotes absorption of effused fluids and tends to diminish the quantity and improve

the quality of mucopurulent discharges." This is extremely clear, and it is a valuable confirmation that counter-irritation promotes the natural process in the best possible way. It is easy to see how by accelerating nutrition and healthy change stimulation promotes the absorption of effused fluids, and how in proportion as repair is brought about the quality of the discharges improves and their quantity diminishes.

This kind of observation is also very good. "There are morbid states not inflammatory over which counter-irritation exerts a beneficial influence; that is, a tendency to promote the return of the morbid structure to a state of health." This simply means that the vitality of the diseased part is so low that it cannot of itself initiate or carry out the desirable process of repair. The special activity brought about by the irritant or say stimulus determines to the part the measure of blood and nutriment that enables it to return to a state of health. Of course there is always the previous question that there must be sufficient nutritive blood somewhere in the neighbourhood of the diseased part or available to it from the general supply or the process fails.

50

This is exactly Dr Kaumann's observation that patients may be so low and weak that the organs cannot give any response to the stimulus.

There are a few other pregnant observations of his that we cannot pass over. He holds that a theory of counter-irritation is impossible without a clear theory of inflammation; and his theory is that the first stage of inflammation is a healthy nutritive activity - but that after stasis defective nutrition results, and that stimulation is then and therefore desirable. We accept every word of this with the one small reservation that we do not consider the stasis condition to be in any sense wrong or unnatural. True the special activity of the first stage may have so, and so far, exhausted the vitality of the part that some assistance is desirable, and this the stimulus affords.

"Both the beneficial and the prejudicial effects of counter-irritants arise from their power of increasing the nutritive activity of the structures in the neighbourhood of which they are applied." This we accept entirely. All are agreed that in the first stage of inflammation so long as the organism is fit to carry on its own process with reasonable efficiency stimulation would be out of place and wrong. It is where the natural process

Practitioner June 1869

fails from exhaustion or general debility that the stimulus is called for and is rightly applied.

"If counter-irritation always high action it is difficult to understand why it should not be employed at the beginning of inflammation".

It does not however always high action but may aggravate it even to paralysis or rupture of the capillaries and therefore it should not in such a condition be used. It is surprising that Dr Ross should have troubled himself with this groundless assumption.

"If it stimulate low action the need for it in such case is plain". Certainly.

"On the other hand it becomes very evident why counter-irritation should be employed during the second stage of inflammation, and in other states of defective nutrition".

He makes a clear distinction between counter-irritants or, as he would call them, stimulants, and depressing revulsants; and he also justly condemns our old wife nomenclature which pretends by counter-irritation to allay, control, subdue, or soothe inflammation, and says we should get rid of them all. In this we heartily concur.

In June Dr Risdon Bennett came to the defence of Counter-irritation. He admits that he was drawn by the papers of Dickinson and Anstie

He cannot endure "the pyrrhonism which is the ruling philosophy of the day", and he smites its exponents without mercy. He quite justly asserts that "there may be much good in counter-irritation though all the theories supposed to underlie it have been found wanting". The whole history of the practice is proof of this assertion. He heaps incontestible proofs "from Nature's own operations and from therapeutic experience" to show the value of counter-irritants. It may be said without doubt that he did not leave a fragment of Dickinson's position tenable. Theories may be innumerable and may vary ever so much, but they do not touch the incontestible proof of the usefulness of the practice. Practical medicine he maintains "has a distinct domain of its own into which physiology has not yet proved its right to intrude; and it has its own evidence, however much science may seem to dispute its validity". Perhaps this is not a very safe position to take but it has little bearing on our subject. His definition also is not very strong. "Counter-irritants are agents which by their irritant action determine an increased attraction or flow of blood to one part of the body, and thus influence morbid action in some

Practitioner Aug: 1869

other part." It is the old refrain - withdraw the blood from the inflamed part and so cure it. He evidently had not seen Ross' pamphlet when he wrote this - indeed the pamphlet was reviewed in the same issue of the Practitioner in which Bennett's article appeared. The evacuant effects credited to blisters, cupping, leeches &c he altogether denies.

So far then as Bennett's paper was a defence of the practice of counter-irritation it may be said to have been complete and unanswerable. Dickinson felt this for so subdued and undone is he when he appears in his own defence in August that he is scarcely recognisable; ^{as the rampant pyrologist of our month,} He sees the weakness ^{before} of Bennett's definition and of course takes his advantage, but to the practical proofs of Bennett he entirely gives way. He brings nothing new to the discussion in this second paper.

Archie in reviewing Dr Ross' pamphlet also referred to Bennett's definition which he could not accept, but he differed from Ross on a point of considerable importance. The theory of Ross made inflammation and the results of irritation identical - in fact anything which draws blood to the part however it may appear to differ in character and degree is in effect essentially the same.

Liverpool Med: and Surg: Reports Vol 4

To this Arstie could not agree, for mild rubefacients and even warm water would by this view be esteemed irritants.

We have said that this is a point of considerable importance not because we see any real difficulty in the matter either on the side of physiology or logic, but because we shall find, five years after this, a man whose opinions cannot be lightly disregarded make this same distinction that Arstie makes, with considerable emphasis and no small appearance of reason.

We may however state that we altogether agree with Dr Ross, for we believe that no one can say where rubefacients end and irritants begin; and it will take far more of fact and of reason than has yet been advanced to show that in their effects they are essentially different.

Dr Alexander Davidson of Liverpool also took up the defence in a paper read before the Medical Institute of that town.

He maintains that "the old theory of counter-irritation drawing away blood from the diseased organ to the surface is indefensible; but the view that disease can be modified by influences acting through the nervous system is quite

Practitioner Oct: 1869.

consistent with our knowledge of the dependence of the healthy processes of circulation and nutrition on the nerves. As to the therapeutic evidence of the value of counter-irritation the evidence is as strong as it can be."

A translation by Dr Anstie of a paper by Dr Dauvergne here on "The danger of Blistering especially in Pneumonia" appeared in October. It is a very interesting paper written with much enthusiasm. The author brings abundance of proof against the practice, not only from his own experience but "from Louis the skeptical physician par excellence the reckoner, the conscientious verifier, from Andral and Trousseau, and from Malgaigne making the arches of the Academy ring as he crushed vesication with the immensity of his science." The conclusion he arrives at is that where blisters do any good it is because of their genuine inflammatory action.

Velpeau states the effect of blisters well. "Their action," he says, "is limited to hastening and deciding a suppuration or a resolution which was previously uncertain. Blisters have this precious quality of bringing about resolution if that possible, and of provoking suppuration if that be inevitable."

Febr: and March 1870

This is an excellent expression, but it appears at first sight to be much more precise and significant than we find it to be. The blister certainly hastens but does not decide suppuration. If a part is not in effect dead the blister cannot determine its suppuration. The second statement is much better. If resolution or the restoration of a part to the status quo ante is in the natural intention possible the blister will help to bring that about, and if the structures are so low in vitality that they cannot recover the blister certainly aids and hastens Nature to break them down and throw them off.

In the following year two admirable papers appeared in the Practitioner - one by Dr Ross and one by the editor, Dr Anstie. They are both directed to a summing up of the discussion. Dr Ross' paper is a powerful piece of destructive criticism. He assails Dr Risdon Bennett's old fashioned theoretical views and rightly condemns Dickinson for his "universal negative" as well as Davergne for being too credulous and starting from too narrow a basis. but he brings nothing new to the discussion, nor does he, so far as we are able to judge, improve

his own position. It is indeed very remarkably evident from this paper that Ross, keen logician and clear-minded though he doubtless was, missed or failed to grasp all the elements of the problem. He entirely forgets or neglects the individual constitution as a factor in the results and reasons as from the remedy alone. This of necessity leads him into wrong inferences and conclusions and exposes him to Dr Anstie's just retort that "The influence of counter-irritants is not depressing but stimulating when they really produce a good effect; but I should deny at once that they never lead to lower vital action, on the contrary I have seen them so lower it with most disastrous results". It will be at once apparent that this difficulty would not have arisen if the constitution had been taken into account. The irritant must be a stimulus always, but it must have a sufficient vitality to stimulate, and a sufficient reparative blood to draw on, or it must fail and perhaps produce not good but disastrous results as Anstie says. Anstie and Ross agreed on the main question that counter-irritants act by stimulating.

Febr. 1869.

the circulation in the part to which they are applied; but they differed on minor matters of interpretation. Ross held that irritants acted in straight lines down into the tissues regardless of structure. Arstie denied this and held that they acted by reflex action on the trophic nerves of the part.

This brings the discussion to a close; and though the subject is not lost sight of for several years after, the personal element falls out of it; and our further reference shall be to the independent efforts and opinions of men who have contributed more or less to our knowledge of the matter.

We can now in a measure understand the meaning of Dr Arstie's expression that he "was fairly startled by the wide divergence of views that is now shown to have been all along concealed under the appearance of agreement in the orthodoxy part."

Before proceeding however we must fall back for a little to consider the work of Mr Furneaux Jordan. In February 1869 he published a paper on The Treatment of Inflammation, but strange to say though this paper appeared in the Practitioner of which Dr Arstie was Editor at the time, and was published in book form in the following year

68

Mr Jordan never seems to have come into consideration at any time throughout the discussion which we have just reviewed. We have wondered whether his peculiar assumption of absolute superiority and independence might account for this isolation.

He says "I have ceased to ask myself what books say, what teachers say, what friends say." Now it is very likely that we have all been more or less disappointed with what books say and especially medical books; with some of our medical teachers even, we may not have always been satisfied; and perhaps the path of duty was not always that pointed out by our friends; but still, we should not consider it safe or wise to disregard them all. Mr Jordan's attitude recalls "John of Gaddesden" and his Rosa Anglica

Et sicut Rosa excellit omnes flores

Ita iste liber excellit omnes practicas medicinae

But we must not permit our minds to be prejudiced for Mr Jordan says many excellent things and brings a mass of evidence from practical results to support his views. With such expressions as the following we in great part agree.

"The secret which underlies inflammation is

unknown; but there is no single remedy which can check or destroy it. There is no evidence to show that inflammation is other than one process however many its stages, degrees, products and results. We must even accept the results of his practice to have been very successful, but we must differ from much of his method and from all the reasons to which he imputes its success.

His object is to check inflammation and make it impossible; and to effect that end he commends the use of pressure and counter-irritation, an elevated position for the inflamed part, rest, and where it is practicable the removal of the cause.

He gives his reasons as follows :-

An absolutely essential condition to the existence of Inflammation is increased space therefore by pressure prevent increase of space and inflammation becomes impossible.

Another essential condition is an increased quantity of blood; therefore prevent this by pressure, elevation, and counter-irritation in the next vascular territory to withdraw the blood from and deplete the inflamed area.

Again. When inflammation prospers there is no other inflammation present.

Again - Every inflammation must have a cause so remove the cause if you can.

And finally - Give rest.

Regarding these elements in his treatment we must say that those considered of first importance and essential are of mere secondary importance; whereas those he regards as of minor importance are beyond all comparison the most essential. In any reasonable treatment of inflammation the removal of the cause is the first step; and putting the part at rest is the second, without doubt. In fact these two steps alone constitute an ideal treatment and all that is ever necessary, if the vitality of the organism be sufficient to repair the injury unaided. Pressure which can only have one object namely to prevent an increased supply of blood to the part we refuse entirely; not alone because we believe the increased supply of blood to be right and necessary but because the pressure that would prevent circulation would destroy the part altogether; and if it is only sufficient to diminish the quantity of blood coming to the injury it can only retard the natural process of repair. Perhaps

indeed moderate pressure may help the circulation rather than retard it; but any pressure that obstructs the circulation would be mischievous. Elevation is right. That however does not prevent blood coming to the part but rather encourages it by securing a good flow from the veins, and so preventing stagnation in the capillaries. We must interpret counter-irritation in the neighbouring vessels & area, as he practices it in a very different way from Mr Jordan. Let us take one of his own examples. In chronic inflammation of the knee, synovial or osteal or both, I cause two-thirds of the thigh and two-thirds of the leg to be vigorously irritated with Iodine, the knee itself less than the thigh and leg. Pressure, rest and position are carefully attended to. Any language which would correctly describe the result would appear bombastic. We do not doubt that the result of this treatment may be excellent but we cannot believe any sane human being would deny that the effect of it on the inflamed part is to increase rather than diminish the blood supply. Mr Jordan's treatment is with the exception of the pressure altogether right and good, but for entirely different reasons to those he entertains.

Medical Times May 1871.

The following is a strange but very suggestive proof of the contention that Mr Jordan misinterpreted his facts. He writes "We should certainly see that the different organs are acting healthily, as the stomach, intestinal canal, liver, kidneys and skin. On physiological and pathological grounds, still more because in actual cases I have found most benefit from it, I give iron in all or nearly all inflammatory diseases, and I sustain the patients on a nourishing and suitable diet". In other words, he takes every reasonable means to secure an abundant supply of clean and nourishing blood - and then he tries to starve the part that needs it most.

Dr Laycock in his lectures in 1871 thus states his views "All counter-irritants act either locally on the tissues including the nerves and bloodvessels, or else on the nerve centres through the nerves and thence by a reflex action on the same, or a distant organ or tissue". But it will be seen that this is only saying nothing in a roundabout way. It shows how they may act, but not how they do or are known to act. He attaches great importance to reflex action on trophic nerves, a matter which we have not been able to understand

Practitioner March 1874.

St. George's Hospital Reports Vol XI 1875.

72
He is however quite clear on the usefulness of counter irritants, and the article is well worth reading.

Dr Ross again in March 1874 read a paper on the subject before the Manchester Medical Society but whether from a desire not to go too closely over his own lines or from a desire to defer to the opinions of others the question is not nearly so well stated as it is in his pamphlet referred to.

An extremely valuable essay On Irritants and Counter-irritants by Dr Lauder Brunton appeared in 1875. Before explaining the action of these agents he thought it "advisable to clear the way by correcting a common error regarding congestion and its relation to inflammation". After doing so, and after carefully reviewing the mechanical theories of Inflammation, he discusses the action of irritants and sums up his conclusions as follows:

1. That dilatation of the bloodvessels and a rapid circulation through them, is advantageous for the tissues and leads to increased growth and more rapid repair. While this Active Congestion is beneficial Venous or Passive Congestion is injurious.
2. The application of an irritant induces dilatation of the vessels and a free current to flow through them. This will help to

71

repair any injury done to the tissues by the irritant so that the injury to a certain extent brings its own remedy.

3. Artificial congestion and Inflammation are entirely different from, and independent of each other, although they generally occur together.

4. Artificial congestion passes into Inflammation when stasis begins to occur in the capillaries.

5. Stasis is not due as supposed by the brothers Weber to coagulation of the blood in the capillaries, the coagulation being induced by changes in the tissues composing the walls of the vessels or immediately surrounding them.

We may break here for convenience to consider these five statements, before stating the others. We accept the first and second entirely and without any reservation. They state the whole case for counter-irritation. The irritant induces dilatation of the vessels and a free current to flow through them; a free current is advantageous for the tissues and leads to increased growth and more rapid repair; therefore plainly enough the irritant leads to increased growth and rapid repair. This is all we shall claim for it, but

we shall claim all this for it.

The conclusions stated third and fourth we refuse and deny almost altogether. That artificial congestion and inflammation commonly go together we accept; that they are entirely independent of each other we cannot accept; and that congestion passes into inflammation when stasis begins we cannot understand. Active congestion and inflammation go together not commonly or frequently but always and inevitably. Active congestion is a state in which there is dilatation of the blood-vessels and a rapid circulation through them. What is inflammation? It is active congestion when stasis begins to occur. But there may be abundant active congestion and yet no stasis - therefore they are essentially different and independent of each other. Let us find the proof for this in the essay. "Active congestion is frequently regarded as almost synonymous with inflammation whereas the two are widely different." Congestion may and very frequently does exist without inflammation, and Inflammation sometimes without congestion. Nothing is easier than for anyone to convince himself of the fact that arterial congestion

may exist without inflammation".

We are not anxious to be convinced, but to know what is true - and we care not whether it is simple or difficult. A state of active congestion may doubtless exist without inflammation, that is without arriving at the condition named stasis, if there is no injury to repair. In fact then, never will be stasis of the blood or its elements if there be no injury. In other words there is no such thing as inflammation without a reparative purpose. Therefore Inflammation and Repair are one and the same thing; and the congestion ministers to the purpose by supplying the nutritive and necessary elements; and there is no, nor can there be, any such result as reparative inflammation without congestion in this sense. We may have a general activity of the circulation as after a good dinner but this cannot be named congestion. There is no special or local reparative need for it. Our whole confusion and trouble has arisen from our unreasonable determination to separate the processes of ordinary nutrition from those of the ordinary or extraordinary but never immutual processes of repair that we have named Inflammation.

"That inflammation can take place without

congestion is shown not only by the fact that it occurs in non-vascular tissues such as the Cornea and Cartilage but even more strikingly by the remarkable observation of my friend Dr. Annie Hollis that textural changes similar to those produced by inflammation in higher animals follow the application of irritants to anemones which have no vascular system whatever! No vascular system whatever! that unscientific and dangerous "universal negative" again. Dickinson got wrecked on it, and we fear even Brunton does not escape. Whether Cornea, or Cartilage or Anemone has any vascular system is not the question, though the absolute denial of the existence of any such shows a peculiar barrenness of scientific imagination. Cornea and Cartilage and Anemone - nourish grow and develop, and they cannot do so without some mechanism analogous to, and in effect equivalent to what we have named a vascular system. And if inflammation is, as we believe it to be, simply an accelerated or specialised nutritive activity, arguing from the well-known and established basis of the recognised blood system, the inference from the facts relied upon by Brunton must be taken to be erroneous. We submit then that there cannot be any inflammation without congestion - meaning

by that an acceleration of the processes of nutrition; but we allow that there may be an increased activity of circulation which even if essentially the same as congestion need not be called by that name, or by the name of inflammation unless directed towards the repair of an injury or structural disease.

We believe that the fifth statement is correct. It seems to be based on direct observation, and it is consistent with what we must take to be the natural intention in the process.

Dr Brunton's further conclusions are:-

6. Pain in an inflamed part is probably due to distension of the vessels and pressure on nerves by the blood being pumped with violence through the dilated arteries against the obstruction in the capillaries.

7. Pain may be relieved by lessening tension in various ways, by position, cold, warmth, blood-letting, and by counter-irritants.

8. Cold probably relieves tension by contraction of the arteries going to the inflamed part; warmth by dilating the capillaries of surrounding parts and thus drawing the blood away from the seat of inflammation.

9. At the same time that an irritant causes dilatation of the vessels in one part to which it is applied, it causes contraction of the

vessels in other parts of the body.

10. It is probable that it does not cause contraction in all parts alike but that definite areas of skin correspond to definite sets of internal vessels.

11. The relief of pain produced by a blister in Pleurisy Pneumonia or Rheumatic inflammation of a joint is probably due to reflex contraction of the arteries in these parts.

12. Blisters are useful in lessening congestion in the Pericardium and in relieving the pain of inflamed joints in rheumatism.

13. The benefit derived from their use in young persons, especially those suffering from a first attack is very great. In elderly persons it is inconsiderable.

14. The beneficial action of a blister in callous ulcer is probably due to the increased supply of blood induced to the part by the application.

The explanation given of the pain of inflammation that it is caused by pressure, may be accepted but with considerable reservation. The characteristic pains of neuralgia so called are not easily if at all referable to pressure from active congestion. It has indeed been frequently observed that

in such cases when inflammation has well set in the pain ceases. It has been argued that pain is the expression of defective nutrition. Neuralgic pains are best explained in this way, and even in such cases as Lauder Brunton refers to, it would not be difficult to infer a similar cause. A state in which any degree of obstruction or of passive congestion exists is a state of defective nutrition however active the processes may appear to be. The admitted means of cure teach a lesson of some such import. A good position, warmth, and irritants or stimulants we can without difficulty bring into line as means which facilitate and accelerate the active nutrition of the reparative process. Cold, blood-letting and depressant poisons on the other hand may stop pain certainly but they do so by diminishing or depressing the vitality of the part and frustrating the natural intention. The 'relief of pain' by these is an altogether different matter from the natural cure or promotion of the intention in pain by those other means.

The statements ninth to twelfth are based on the idea that an irritant while causing dilatation where it is applied,

causes contraction in other parts that are perhaps anatomically related - through reflex action from vaso-motor centres. It is this more or less remote contraction that is the object of counter-irritation according to this view. It is by depletion that the cure is supposed to be brought about. It is exactly the same view as we met with some hundred years ago and have not altogether lost sight of at any time ever since. It has been derided, discarded and exploded very many times indeed, yet here we meet with it again - fresh as ever, and with better scientific authority than it perhaps ever had before. Yet it is difficult to understand how any inflammation can be made to cease without removing the ~~first~~ cause. A knee tendon is injured and torn. We apply a blister to the skin over the injury and put the limb at rest. It repairs quickly and well. What has the blister done - how has it acted? According to the view in discussion it causes a contraction of the vessels of the injured or inflamed part and so relieves pain and determines cure. But we know that contraction of the vessels would retard or impede that vascular activity of the

part which is so necessary to the repair of the tendon and the injury. This then cannot be the explanation for we have repeatedly found the blister hasten recovery in a very remarkable way. The only possible explanation, not to say the only reasonable one, is that in this familiar case the blister hastens repair by accelerating the circulation and therefore the nutrition of the parts injured. We cannot then accept this depletion view, and that especially as applied to the cases mentioned.

Dr Brunton depends for support of this theory on the observations of Ludwig, which he accepts and confirms, and on an experiment of Zulzer. This experiment is intended to show that if an irritant is applied to the vascular area of one of two neighboring arterial branches the area of the other is depleted through the reflex contraction of its bloodvessels.

Taking two neighboring arterial branches with their vascular areas, which we may for convenience name A and B, Zulzer found that the application and especially the continuous application of an irritant, over the skin of the vascular area of A determined a depletion of the whole of the vascular area of B.

with marked diminution of the vessels and a blanching of the whole area. The vessels in the area of A on the other hand were enlarged and multiplied, and the area was by so much the better nourished. It is reasonable enough to believe that an irritant applied to the area of A will produce these results in the area of B but for other reasons than can rightly be named depletion. Depletion seems to imply a withdrawing from area B, of blood that is there already in assumed excess. But is it not as reasonable to suppose that this state of B arises from the diverting of the current from B into A at its point of origin from the main artery. This seems indeed much more reasonable for we cannot understand how an area can possibly be depleted except through the veins passing from it. We cannot surely suppose that the course of the current in the arterioles of area B is reversed by reason of the irritants at A, and hence there appears much reason why this idea of depletion should be given up. Diversion - which by the way we met before but in another sense - would be a much better term.

But allowing this that the irritant at A somehow produces a diminution of the

blood supply in the area of B what is there in this or is there anything in it, that can lead us to expect that an injury or diseased state in B will be assisted to repair because of it. We cannot see any reason for the assumption but we can see much reason against it.

We do not deny that when a given portion of blood is drawn into one part it cannot be in another part at the same time and we can readily see how the simple elasticity of the vessel walls is quite sufficient to account for a contraction to the extent that their contents have been diminished or withdrawn.

In cases of passive congestion arising from the over distension and exhaustion of the blood vessels we can easily understand how counter-irritation at some little distance may do great good by stimulating and improving the nutrition of the part and by perhaps withdrawing so much blood as will enable the vessels to recover their natural calibre and activity. This is the only condition in which we can see the deprivation view to be of any meaning - and even in this it does not mean much.

The thirteenth conclusion is almost correct.

Praktitioner Sep: 1879.

The observation is right, but the interpretation is only partially so. Vitality and not age is the determining factor. A healthy man at seventy may respond to a blister quicker and with better effect than a weakly child of seven. It is only then so far as age and vitality run pari passu that the observation is true.

The last statement is without doubt correct. Although we have had to differ from some of Dr Brunton's statements, that does not prevent us acknowledging the admirable method and precision of this article, and of his observations in his text-book on Therapeutics. Every thought even when it goes wrong, as we have ventured to say, yet goes straight, and so his errors when they are clearly such are almost as useful for our instruction as are his correct conclusions.

Mr Chiene in 1879 wrote a very interesting essay on A Counter-irritant its Action. His idea is that "The counter-irritant comes under the class of remedies which relieve or cure inflammation by blood-letting by relief of vascular tension directly or indirectly, as the case may be". And after admitting that "Counter-irritants are as yet little understood," he adds "our very ignorance regarding the action

of a blister coupled with the frequency with which we use it makes it one of the most interesting questions which can occupy our attention as thoughtful physicians and surgeons. He advances what we must be excused for saying is a peculiar theory. It seems to have its basis in the reflex action of nerves, but he allows a direct effect of the counter-irritant on the tissues much the same as Ross contends for against his opponents who maintained the theory of reflex action. We cannot do better than state a case as Mr Chiene himself puts it. "When the kidney is inflamed the bloodvessels of the organ are dilated, with a slow low congestion. - the vaso-motor centre has lost control of the bloodvessels of the kidney. its function therefore is in abeyance it is congested. If we now apply a counter-irritant to the skin, as a result through the sensory nerves we have a change in the vaso-motor skin centre with a corresponding change in the bloodvessels of the skin. There is increase in the amount of blood in the vaso-motor centre. There is a flow of blood to the vaso-motor centre. - the neighbouring parts are bled, the vaso-motor centre of the kidney is in close anatomical relation to the vaso-motor centre of the skin over it."

~~Crichton's~~
"Holmes System of Surgery"

The kidney vaso-motor centre which is congested is bled. It supplies blood to the skin centre. The result is that the vaso-motor kidney centre gradually regains its function. The kidney vessels as a consequence of the change in the vaso-motor centre pass from congestion to determination. a free flow of urine takes place, and from determination to one of relative anaemia, the kidney is restored to a normal condition". As we must confess that we do not understand this, we refrain from any comment on it. The essay however is written in an excellent spirit, and is well worthy of perusal.

We have not been able to lay hands on anything written expressly on the subject since that time, so we can now only refer to the text-books of the day. It would not be difficult to review them all so far as this matter is concerned, but it is not necessary to do so especially because there is nothing new in any of them that has not already met us in one form or another. And as we have had occasion to refer to several of them incidentally we shall confine ourselves to one or two merely to show more exactly, what our present position is in regard to this question. "Here then" says one of our best works on Surgery "is a considerable channel of influence for

Eriksen's Surgery

counter-irritant applications that through inter-arterial sympathies which vaso-motor nerves maintain, or contribute to maintain and in some cases through the general circulation they tend to divert blood from flowing into the inflamed part." This confirms and justifies our comment on Dr Lauder Brunton, but it leaves the essential part untouched. It does not show the diversion of blood from the inflamed and diseased, or injured part can help towards repair and recovery. There can be no mistaking this idea or the intention underlying it, for refrigerants are strongly commended in the same chapter as a most effectual means for alleviating pain and promoting a healthy state by preventing the inflammatory process. This interpretation and this treatment we cannot accept as has been already sufficiently explained.

Another of our best known books states the matter thus. "The value of counter-irritants is recognised by practical surgeons, and they are undoubtedly among the most effective local remedies we possess for combating Chronic Inflammation, yet their mode of action is difficult to explain. The theory that by exciting a local inflammation in the skin it was possible to draw the disease away from

the deeper and more important parts is no longer tenable. The theory that by stimulation of the sensory nerves of the skin a dilatation of the superficial vessels is produced, accompanied by a corresponding contraction in the deep parts cannot be supported by scientific evidence. In fact as Biliroth has pointed out it is probable that in many cases especially in extremely sluggish chronic inflammation - the good produced is probably rather by an increased afflux of blood to the affected part than to a diminution of the blood supply".

We are extremely pleased to be able to agree with all this expression and our whole object and desire is so far as it may be in our power to remove the matter from the unscientific and unsatisfactory state of mere probability into that of simple certainty, for we see no reason why it should not be so placed.

That there is a great need for this must be apparent to any one acquainted with the teaching of our very latest texts on the matter.

One asserts that Counter-irritants have their undoubted good effect because of their derivative - whatever that means - and their evacuant effects. Another, that they influence inflammation by checking it or causing absorption of chronic

"Materia Medica and Therapeutics" by J. Mitchell Bruce M.D.

inflammatory products; and another, one of the most recent and most familiar authorities presents the subject somewhat fully as follows: "The doctrine of counter-irritation may be said to be, that when a part at some distance beneath the surface of the body, such as a joint, or even remote from it, such as the lungs, is in a condition of inflammation, pain, unnatural activity, or overgrowth, an alterative effect may be produced upon its nutrition, by altering the condition of an area of skin, superficial to it or even at a distance from it. A second or 'counter' seat of irritation is set up to relieve the deeper and more vital part. Now we may conclude with respect to this theory:—

1. That rubefacients and vesicants will afford relief to the circulation of parts in immediate vascular connection with the selected area, by attracting blood and draining off plasma; to the same extent the general circulation will be depressed, and visceral congestion or inflammation will be diminished. At the same time the heart will be relieved.

2. That the irritation of the cutaneous nerves will modify in a simple reflex way, through the centres in the brain and cord, the circulation, and nutrition generally, of the

parts beneath; the impression which passes in being immediately reflected along the vascular or trophic nerves.

3. That possibly the irritation of the local nerves and vessels may affect the vaso-motor and trophic centres in the brain and cord, presiding over the area of skin; and that this disturbance may so influence a neighbouring trophic centre (say of a joint) as to produce through it a change in the nutrition of the tissues (such as a joint) in the neighbourhood of the area, to which the irritant was applied.

4. That vesicants and pustulants may produce a flow of plasma or pus, which will relieve the blood or tissues of organised or other poisons, which are the cause of the disease. This is the old humoral view founded on the pathology that "humours of the blood" are the origin of disease.

This is a very good example of our old and abiding danger of offering mere words instead of definite information. The best comment upon it is in the author's own words "These measures seem to be very simple, but their action is on the contrary extremely complex and indeed still very obscure".

Having now submitted as much of the enormous literature of this subject as

seemed necessary or useful or appropriate to the purpose of the essay we will endeavour to sum the matter with as unprejudiced a mind as possible in the hope of being able to clear it up to some extent however small. It was in order to avoid complicating issues at this point by too much or too frequent reference that we made somewhat full comment on the more important views, in the course of the retrospect we have given of the question. It cannot be denied notwithstanding all the effort and attention which has been directed to the elucidation of this subject that it is yet in a most uncertain and unsatisfactory state, nor can it be doubted that it is of very highest practical importance to have it cleared up and brought to a reasonable and scientific position. We may not be able to accomplish so much but we hope to be able at least to deliver it from part of the great mass of antiquated fanciful doctrines which have been imposed upon it and have so tenaciously clung to it down to the present day when it is admittedly as obscure as ever it was. The study of the question has suffered almost not less from a lack of scientific imagination than from the over abundance of a lame

sort of imagination that was not scientific. There is infinitely less excuse for the defect of the one in our day than was for the excess of the other in the past when the knowledge of the structure and functions of the organs of the body was incomparably less than it now is.

It is not necessary and it would serve no useful purpose to further discuss such ideas as that counter-irritation brings about the cure of disease and a healthy state by means of any such assumed effects as have been variously named Metastasis, Reversion, Derivation, Vicarious Change etc; and if there is a modicum of meaning in the reputed evacuant influence of these remedies it must be very small. We feel that it is altogether insignificant and that it may with advantage become a negligible quantity in our calculations.

Hunter's axiom, that there cannot be two diseases or two actions, or let us say two special activities, in the same part at the same time, we take to be correct but we attach a very different meaning to the expression to that given it by Hunter, and since his time.

The practical interpretation of the idea has been that a deep inflammation may be checked

or stopped by setting up a second inflammation in another and superficial position in the same part. We do not doubt that this can be done. It is a simple question of vital kinetics. If there is an injury and a centre of inflammation in the deeper tissues the blood is determined or for our purpose attracted to that point with a certain force. If we set up another centre of inflammation at a little distance in the same part the blood will be determined in that way also with a certain force. In the same body, and especially in the same part we may take it that the force of determination is closely proportionate to the injury. It will therefore be evident that unless the second irritation is more severe than the first, a determination from the first inflamed area into the second will not result. But if the irritation is sufficiently strong this reversion of the determination will take place. It is a familiar observation that irritants fail to take effect in proportion as the deep inflammation is acute and intense. Dr Stokes noticed this and gave the right interpretation some fifty years ago. There cannot be two actions or two inflammatory determinations of blood in the same place at the same time. That is the whole meaning that can now be given to the maxim.

The most important question however remains.

If we can in this way stop a deep inflammation is it desirable to do so? Cui bono? Are we sure we act intelligently and to a good purpose, or is it the intention only that is correct?

If the whole process in the deep parts is an evil, and working evil, any thing or means that will stop it must be for good and the proceeding by counter-irritation is reasonable, but if there is the slightest cause to suspect that this deep process has the merest fractional intention towards good, our treatment comes at once under suspicion; and if there is anything like sufficient reasonable cause to believe that the process is altogether for good, then our treatment that would prevent it is worse than inexcusable. This last is our position. The inflammation in the deeper parts is the effort to repair and it is wrong to interfere with it in any way that would prevent it.

It will be at once clear that any means like say fomentations and stupes which would promote and accelerate the circulation in a whole limb or part acts in a very different way from a limited local irritant. This does evil in the hope that good may come by it, a principle which by the way, we fear has not its best basis of appeal in natural law; those others assist the natural process to improve nutrition

and Hunter's dictum is quite inapplicable.

The imitation of Nature to which appeal is so often made is a right enough proceeding but we must be sure that we interpret Nature and not ourselves or our prejudices and unscientific imagination. It would do no harm if medical theorists remembered Hines' equation that in nature as in morals the Ego equals the Non-ego, and that we are constantly exposed to the danger of projecting ourselves into even our scientific investigations. If nature eliminates the poison of small-pox and of measles largely by the skin that affords no reasonable basis for the use of 'suppurative evacuants, say in case of typhoid fever or the ague, and there is if possible less excuse for them in cases of injury or local disease. The only imitation of Nature that is justifiable and of practical use, is when we assist Nature by bringing our means and diligence into line with the natural intention and effort, to sustain it or to assist it when perhaps it is failing. This imitation, or rather following of Nature we are most anxious to maintain and to bring to our service in the views we venture here to advance. Let us imitate and assist Nature in her processes of inflammation.

and that is all we contend for. We feel that we have not to contend for even so much, for we believe that we have been actually assisting Nature for a very long time indeed while we hoped and thought we were doing something the very opposite - "to thwart Nature and to force her into the paths which Art dictated."

The Depletion theory of the action of counter-irritants we have already dealt with. It seems to be quite untenable.

With extremely little exception all our medical teaching past and present has made inflammation a violent disease and an altogether unnatural process which by every diligence and effort we have endeavoured to prevent, or cut short and undo. The result has been, as we have endeavoured to show, much confusion and uncertainty. Even when abundant facts and observations of the most evidently conclusive significance forced men like Ross and Lauder Brunton to prove and practically admit a case which would necessitate an interpretation directly contrary to the accepted teaching, they refused to take the indisputable verdict of their own facts but fell back on

the ancestral tradition, and there we remain. We have no right theory of inflammation. "It is still in mystery", and without a correct theory of inflammation we never can have a right theory of the action of irritants. It is admitted that the effect of stimulants and irritant applications is to accelerate the circulation and to produce a state of inflammation. So when we know the meaning of the one, we shall know the action of the other but not till then.

Let us by way of hypothesis assume that inflammation is a natural effort, directed to the repair of injury or of a diseased state and see how the known phenomena and the results of the process fit in with the assumption. Every proved fact without exception that we have met in the whole course of our inquiry falls so readily into order and harmony by this assumption that to reason them into place would only confuse a beautiful simplicity. We are therefore limited to the examination of the few points which seem to disagree with it and to indicate a difficulty to its acceptance.

At the very outset we are met by the most significant fact that an inflammation never occurs in the body or in any part of it but

when and where there is some injury, or what is the same thing some disease that needs to be repaired and restored. Surely this coincidence itself, if it is nothing more, indicates a connection close enough and constant enough to justify a suspicion that the disease and the inflammation are related as cause and consequence. But it may be said that this is a truism which all recognise and admit. Why then interfere with the process. Why all this diligence "by depletives, evacnants, revulsants, refrigerants and the rest to check the process and to prevent it, if we recognise its good purpose. We are surely inconsistent, or there is no meaning in words nor validity in reason. It is only "when the pain, and the inflammation is excessive, and when there is unnatural activity or overgrowth" that we interfere. But if "pain is the prayer of a part for food" as one of our highest and most philosophical authorities declares it to be, that surely is not to be prevented, or undone by any, but the one reasonable method of supplying the need it so eloquently expresses. As to inflammation being excessive or being an unnatural activity or producing overgrowth, we venture to say that inflammation is never excessive, nor tends to produce overgrowth except

where unrest or irritation or some other preventable or removable cause perverts or vitiates the process, and we should be careful when we speak of unnatural activity that our observation or judgment is not at fault; for there must always be a presumption that Nature knows its own needs better than we do or can know it, and it must therefore be difficult and unsafe to say that any natural process is unnatural.

"The prejudicial and beneficial effects of Counter-irritants" says Dr Ross "arise from their power of increasing the nutritive activity of the structures in the neighbourhood of which they are applied".

This observation is right and it seems to present a difficulty. But it comes easily into line with the other accepted observations to prove our hypothesis to be correct. If increased nutrition is beneficial it can only be so when the part concerned is insufficiently nourished. We have therefore in this a valuable confirmation that defective nutrition is a fundamental element in chronic local disease and that the proper treatment and rational cure is to provide sufficient nutrition. There are only two possible ways in which this can be done; namely, by keeping the blood of the body sufficient, and sufficiently nutritive by appropriate nourishment.

and by getting a fuller supply into the part to supply the special need. Irritants serve this latter purpose by stimulating the local circulation and so accelerating nutrition. In other words the irritant application produces an inflammation which the part of its own unaided power was not able to. It must seem strange that we endeavour thus to procure a condition which had it existed naturally we should have esteemed a disease and treated perhaps by antimony and refrigerants in order to allay, or soothe, or check it.

The prejudicial effects also come by reason of increased nutrition. This would appear to be a contradiction of the observation we have just considered, but it is not so. If the natural effort to supply increased nutrition, in other words the inflammation, is sufficient there is no reason for our interference, and we can readily understand how the further acceleration of an already sufficiently active process may do harm in nutrition as in everything else. So the seeming difficulty resolves itself into this, that stimulation is beneficial when and where it is necessary, and prejudicial when there is no need for it.

" Arterial congestion passes into inflammation when stasis begins" (Brinton) " The first stage

of inflammation is a healthy nutritive activity, but after stasis defective nutrition comes" (Ross). These statements again are closely related, for "arterial congestion is advantageous to the tissues and leads to increased growth and more rapid repair". There is then no doubt about the early stage of inflammation up to the point of stasis. It is a healthy nutritive activity. It will be noticed that Brunton would not call this stage inflammation; but he is the only authority who ever attempted this distinction so far as we know. Dr Ross' view that defective nutrition comes on at the point of stasis seems to mean very nearly if not exactly the same thing, as Brunton does in the assertion that inflammation begins at this stage; for to Brunton inflammation is an evil state, as it is to Ross - from this point.

Whether a difficulty really arises here, is not quite certain. There is cause to suspect that it is more a matter of words than of reality. It is most interesting however to see that the evil effect of inflammation is getting narrowed down. The whole of the stage of active congestion is allowed to be a good and desirable nutritive process, and it is not likely that the resolution stage could be considered an evil, at any rate we have not seen it so characterised.

All then that remains under suspicion would seem to be the stage of stasis. This is very suggestive. How very reluctant we are to be driven from our old positions. We see nothing in the stasis of inflammation to justify our looking on it as a wrong state. It is impossible for us to believe that a natural and continuous process can be right and beneficial in its first stage and in its last stage, but wrong in the middle stage towards which the first works and from which the last has origin. The arrest of the circulation and the seemingly slow activity of this stage is the basis of ~~the~~ ^{the} assumption; but it is almost certain that ~~the~~ ^{the} interpretation is wrong.

"The benefit derived from their use in young persons especially those suffering from a first attack, is very great; in elderly persons it is inconsiderable". (Brunton) "There are morbid states not inflammatory over which counter-irritants exert a beneficial effect; that is, a tendency to promote the return of the morbid structures to a state of health" (Ross). It has been a frequent observation that irritants have less effect in "asthenic" conditions.

These interesting statements are of very nearly identical signification, as we have already hinted.

The more active the vitality of a part, the more readily it inflames in response to an injury or to an irritant; hence the readiness with which the young benefit by counter-irritation. On the other hand as vitality fails with age in a somewhat regular ratio we can see how the effect on elderly persons may be insignificant or even nil. We saw some years ago an old woman of seventy five operated on for strangulated hernia. The operation was quite successful and everything would have been right if the wound had healed. Five days after the operation, when the patient died, the edges of the wound stood clean apart, without the slightest trace of an attempt at inflammation. We can see now that the proper proceeding in this case would have been to apply perhaps a blister round the wound in the hope of producing sufficient inflammation to close the cut, though we have a doubt that even a blister would have had any effect, the vitality being so low; and besides, a wound is its own sufficient irritant presumably when repair is at all possible.

Again a morbid state that is not inflammatory is always a state of defective nutrition and the reason why stimulation helps is evident enough

There is nothing more that we can think of which calls for comment. We are ourselves thoroughly satisfied not less by the actual facts of practice and experience, into which we cannot here enter, than by the indications of reason which we have endeavoured to state however inadequately, that every process of inflammation is a natural effort directed towards cure, and that the beneficial effects of counter-irritation always result from their facilitating or accelerating that process.

We had hoped to follow these views to their natural issue and indicate at some length how they bear on the actual practice of the use of counter-irritation, but the essay has already gone beyond the space we had intended for it. We are therefore compelled to confine ourselves to a brief enumeration of a few general principles which we think have been established in some measure of reasonable certainty.

In this as in any treatment the first consideration is to be sure that we do no harm, whether we can or cannot do any good.

The outcome of practical experience, regardless of theory, goes to show that irritant applications are contra-indicated in all states of acute inflammation whether

in deep or in superficial parts.

Experience again has shown that the stimulation of chronic diseased states in which vitality is low and nutrition slow and defective always gives good results if the part or the organism is not altogether too weak to respond to the application in which case so far as can be seen it can do no harm even if it fails.

In cases of local passive congestion resulting on general debility, or on a failure or exhaustion of vaso-motor control, stimulation is also, and perhaps always beneficial.

After acute inflammation, in the later stage of stasis and in resolution, gentle stimulation will certainly do good by accelerating nutrition and hastening the natural process to its termination.

especially in such cases as tend towards debility and failure of the natural effort.

We are content to leave it in doubt whether inflammatory conditions of the lungs and liver and other internal organs come within the range in which counter-irritation is useful. The indications seem to be that it may serve good in such conditions. Our experience of the treatment of acute affections of the stomach and kidneys would seem to point

distinctly in this direction.

We need scarcely point out how readily these general conclusions come into harmony with the theory of inflammation, and of counter-irritation which we have ventured to propose. Our confidence must be excusable if we assert that we cannot detect a single flaw in the argument. We have in a sense fitted reason against prejudice in the matter yet we are compelled by every evidence to accept the truth of our hypothesis. We are exceedingly impressed with the far-reaching importance of the matter; and it is in no sense of false humility that we conclude with an expression of our conviction that the subject is worthy of far more competent treatment than we have been able, however desirous, to bring to bear upon it.

De hoc multi multa nemo satis.