result of physiological induction; it was a plain result of facts collected in the wards and in the dead-house. I shall not discuss Hunter's claim to the discovery of this operation, it is as clear as the discovery of any fact of science. But, if there must be arbitration between Anel and Desault on the one side, and Hunter on the other, or between France and England (for it has been almost made a national question), let an Italian (Assalini) be the arbitrator; for he had the singularly good fortune to see three decisive operations. In 1781, he saw Spezzani at Padua tie the femoral artery previously to an amputation of the thigh for popliteal aneurism; in June 1785, he saw Desault in Paris tie the popliteal artery for popliteal aneurism, which he did not, according to the then prevalent practice, lay open; and, in December 1785, he saw Hunter at St. George's Hospital tie the femoral artery in the sheath of the triceps muscle for the cure of the same disease—and this operation, he says, "excited the greatest wonder and awakened the attention of all the surgeons of Europe". It was indeed a splendid achievement, and its utility is not half told by counting the thousands of lives which it has been the means of saving; for its yet greater utility is that it still abides as a great testimony of the value of the scientific mind in the practice of surgery.

Such was Hunter's great work in surgery, and this it is which still abides; for, since the time of Hunter, science has never yet been absent in the teaching of our schools. Since his time, the teaching of practical surgery has never been divorced from the study of biology. They have been cultivated in various degrees in various schools by different men, but both have held their ground, and both will still increase and grow. Yes; both will increase, though the great master of art, the greatest practical surgeon of our time, is gone. Men will no longer watch those eyes that were so keen, nor try to imitate those hands that were so strong and yet so sensitive, so swift and light; nor wonder at that keen and clear perception, the prompt invention, the perfect calmness in the greatest difficulties. All these are gone, and with them are gone those things that endeared him to us still more—the warm heart, the friendliness, the generous rivalry, and the social grace. These are gone; but Fergusson's lessons will still remain amongst us; and among them will be this, that every man, according to his ability, should have both art and science, should work with both as with both hands, as if with one mind and one design. It was thus that Hunter wrought in surgery.

These are some of the works that Hunter did for surgery; and now mark what he did for surgeons. Before his time, they held inferior rank in the profession. There were some among them, men of great personal ability, who gained high rank, as Wiseman, Cheselden, Hawkins, and Percival Pott; but for the most part they were subordinate to the physicians, and very justly so, for the physicians were not only better learned in their own proper calling, but were men of much higher culture—educated gentlemen and the associates of gentlemen. From Hunter's time, a marked change may be seen. Physicians worthily retained their rank, as they do now, and surgeons rose to it; and surgery, in the lessons of Hunter, repaid medicine for the teachings of a century. After his time, surgeons came to be the chief anatomists, and took a fair share in the teaching of all the schools; and they gained entrance into the ranks of the most cultivated class. Yes, more than any other man, Hunter helped to make us gentlemen; and the lesson of this fact is very striking, for it was not by any personal qualities, it was not by wealth or social skill, that he did this. There are but few records left of what manner of man he was; but they tell that he was a rough and simple-mannered man, abrupt and plain of speech; warm-hearted, and sometimes rashly generous; emotional and very impetuous, quickly moved to tears of sympathy, as quickly ablaze with anger and fierce words; never appearing to those about him as if he were a man of large mental power; never personally attractive; too busy to attempt to influence those about him; and so he had but few friends, and he obtained the personal regard of very few, and no man paid him the homage of mimicry. The whole of the influence which he exercised on surgery and surgeons was the influence of the scientific mind. What follows? Surely that, if we are to maintain the rank of gentlemen, if we are to hold this highest prize of our profession, it must be by the highest scientific culture to which we can attain; and to this we are bound, not for our own advancement alone, but by the plainest and strongest motives of our duty.

These are some of the grounds on which, beyond all question, Hunter's memory deserves the honour that we pay to it to-day. There are many more than these; but, in want of time, I have omitted some, and, in want of just appreciation of him, I have omitted more. Whatever one might tell of his honour to-day, his claim to honour is not yet closed; for the influence of men like Hunter extends far beyond the time and space of their own conscious activity. Their true thoughts live after them; they not only endure and remain, but, in the continuity of mental

life, they really live; they pass on from one generation to another, and in each succeeding generation they grow and are developed, and come nearer to perfection. Thus the true thoughts of Hunter still live in us, and, when we do honour to his memory, we do it not as to that which is past, but to a power still abiding with us and doing good. His true thoughts still live in us, and they will live beyond us, never ceasing to urge and help men onwards in the pursuit of truth; for in the world of mind, he that is mortal may produce that which may have immortality.

ON THE RESULTS OF RECENT RESEARCHES IN THE TREATMENT OF PHTHISIS.*

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[Concluded from p. 160 of last number.]

b. Next, let me call your attention to the use of antiseptic agents in the treatment of phthisis, and especially to the use of antiseptic inhalations.

In the first place, let us inquire if the results of modern pathological investigations give us any sound reason for the belief that antiseptic vapours can exercise a remedial influence in tubercular consumption.

Let me quote Rindfleisch's observations on "How Scrofulous Persons become Tuberculous" (Ziemssen, *Cyclopaedia of Medicine*, vol. v, p. 639). "When we consider that scrofulous persons are especially predisposed to tuberculosis; that tuberculosis hardly ever occurs except in scrofulous persons; that tuberculous phthisis is only a combination of scrofulous inflammation and tubercle; and that in scrofulous persons an inflammation brings with it the risk of tuberculosis, we can hardly fail to see that, in certain men, as in certain animals, inflammation runs a peculiar course. *The cheesy infiltrations and suppurations of mucous membranes elaborate a poison which, when absorbed, produces tubercles.* This constitutes the real relationship between scrofula and tuberculosis. The tubercular poison in most cases is thus manufactured by the patient himself.

"Pulmonary phthisis is almost always a general disease. There is first scrofula, and then a cachexia, from the absorption of scrofulous products."

Rindfleisch considers he has demonstrated that, in the early stage of pulmonary phthisis, there is a combination of two conditions, a circumscribed catarrh of the small bronchi at the apex, and an eruption of milary tubercles in the acini belonging to these bronchi. "I have never seen," he says, "a circumscribed catarrh of the small bronchi without an initial tubercle granulum, nor an initial tubercle granulum without some bronchial catarrh. I believe, indeed, that the catarrh is the earlier, the tubercle the later, process." "I believe that, in the catarrhal secretions of a scrofulous person is contained the tubercular poison which becomes inoculated in the edges and corners of the narrowest portions of the bronchi," and then gives rise to the tubercle granulum.

I quote this opinion of Rindfleisch because it seems to me to afford a pathological basis, and to give a pathological indication for certain therapeutic processes which have been again and again advocated, but which have never, at any time, thoroughly established themselves in medical practice.

If, as Rindfleisch asserts, the dissemination of tubercle through the lung depends on the infective quality of the secretion of the bronchial mucous membrane when a bronchial catarrh arises in a scrofulous person, then the very obvious remedy is to convey some vapour into the lung which may have the property of disinfecting this infective secretion. It may be objected that there is no such vapour; but such an objection is entirely without foundation, because it would require for its proof that every vaporisable substance had been repeatedly tried and had invariably failed.

There is another possible mode, indicated by modern pathology, in which antiseptic remedies might act. We might be able to add to the blood some agent capable of destroying the infective property of those substances which are absorbed from the foci of scrofulous inflammations, and which we may term the *poison of tubercle*. Could we administer such an agent during or immediately before the possible dissemination of such substances, we should have a remedy for tuberculous phthisis. Such, I take it, are some of the suggestions which modern pathology and research yield towards a rational treatment of phthisis.

* Read before the Medical Section at the Annual Meeting of the British Medical Association in Sheffield.

But sound practical medicine must rest on an experimental as well as a theoretical basis; and we must, therefore, inquire what results have followed the actual use of antiseptic remedies. Now, I am by no means sure that we shall not discover that many of our remedies for phthisis act antiseptically, which are thought by many to act otherwise. May not the sulphurous mineral waters, such as those at Eaux Bonnes, act in this way? It must, I imagine, often have struck many of us that the theory which explains the action of these waters by the assumption that they develop affections—"rheumatic, gouty, or herpetic"—which "counterbalance tubercularisation", is almost as clumsy and unsound as the "*similia similibus curantur*" of the homœopaths. It seems much more likely that they act by conveying to the blood and the secretions substances which destroy the poisonous and infective properties of the products of scrofulous inflammation; and that these substances, in their turn, set up other forms of irritation of a comparatively harmless kind.

Again, may not much of the beneficial influence of mountain air be due to its antiseptic properties? I shall attempt to answer this question when I come to speak of the influence of mountain climates on pulmonary consumption. But let us consider now, more especially, the use of medicated antiseptic inhalations. Scattered observations as to their value exist in abundance; but we have not as yet, in this country at least, any trustworthy systematic account of their patient, extended, and persevering trial. Much in detail has yet to be worked out with regard to the best modes of their application, the best substances to select, and the kind of cases most suitable to their administration. I have long been considering this important question; and I have, I hope, nearly brought to completion a method of administering antiseptic and other vapours which will be generally acceptable.

But let us gather together a few of these scattered observations to which I have alluded. Dr. Copland mentions the fact that "a young man, who had repeatedly come under his observation in an advanced stage of phthisis, completely recovered his health after he had been for a considerable period employed in the manufacture of *creasote*".

Lemaire's observations on the inhalation of carbolic acid may be briefly summarised as follows. It must be remembered that he gave it also internally in aqueous solution. He found, he says, very remarkable effects follow its use. There was diminution of cough after twenty-four hours, and, in some cases, almost a complete disappearance after a few days. The expectoration was diminished or almost suppressed, and, if the sputa were offensive, their fetor disappeared. In many, the physical condition of the respiratory organs was ameliorated. Two were cured; in others, there was a subsidence or disappearance of *râles*, and parts became pervious to air which had previously been impervious. In cases in the second stage, he had noticed increase of strength, return of appetite and sleep, increased freedom of breathing, and general exhilaration. The amendment, however, did not persist in all cases.

Dr. Sansom also offers his testimony as to the "real value" of the "dry inhalation of carbolised air" in phthisis. This excellent observer has placed on record many cases in which the internal administration of the sulpho-carbolates appeared to be of great service.

The inhalation of balsamic vapours—frankincense, turpentine, storax, etc.—in phthisis, is of very ancient date, and its value was, from time to time, strongly insisted upon by the older physicians. Again and again has the dilute vapour of tar been advocated as of much use in pulmonary consumption; and so cautious a writer as Dr. Copland observes, at the end of his *Historical Sketch of the Treatment of Pulmonary Consumption*: "The inhalation of the fumes of tar or of *creasote*, or of the terebinthines, very weakly diffused in the atmosphere breathed by the patient, is in some cases beneficial in impeding the advance of tubercles, or the formation of cavities, and in healing the surfaces of cavities which have been formed."

I cannot myself doubt the value of antiseptic inhalations, even if they only have the effect of temporarily cleaning, as it were, the pulmonary surface. It is a process somewhat analogous to that of washing away the decomposing discharges of a foul superficial ulcer.

Sir William Gull has said that he can smell syphilis. I think I can smell phthisis. There is a peculiar nauseating odour in the breath of many phthisical patients, even before the development of marked physical signs. Of course, if antiseptic inhalations are to be of use, they must be frequently employed, and means must be adopted which will insure the antiseptic vapour reaching the whole of the diseased portion of the pulmonary tissues. The vapour must be evenly diffused through the atmosphere the patient breathes. I must now leave this part of my subject; and I fear I have left myself but little time to deal with the two remaining points which I have selected for consideration.

c. I wish to say but little on the subject of the remedial influence of

rest—local rest for the portion of lung diseased in cases of phthisis. I agree with those who, like my colleague Dr. Roberts, have advocated the practice of limiting the respiratory movements in certain forms of acute inflammation within the chest—in cases of pneumonia and pleuritis; but I wholly doubt that enforced inactivity of the respiratory function is advantageous in phthisis generally. When complicated with an acute attack of pneumonia or pleurisy, limitation of the respiratory movements of the chest-wall may be of temporary advantage; but I am disposed to think that those who advocate the establishment of a sort of pulmonary anæmia, as a means of checking the advance of tubercular phthisis, are resting on a false analogy and an erroneous pathology. I have heard of a "lung-splint"! and I doubt not there are instrument-makers who would construct a splint for the liver, if we would let them; but, in either case, I think the instrument-maker alone would be benefited. So far from enforced "rest" being curative in phthisis, the very opposite plan of treatment has been proved to be very beneficial. By the action of mountain air, a sort of lung "gymnastic" is excited. There is greatly increased activity of the respiratory functions; and, in climates where such a mode of life is possible, we hear of living in the open air as the best cure as well as preventive of phthisis.

Let me again quote that eminent pathologist Rindfleisch (Ziemssen, vol. v). He is explaining why it is that the tubercular process usually begins in the apices of the lungs. "We can offer some explanation of this fact, if we can show that the catarrhal secretions of scrofulous persons are less easily removed from the bronchi of the apices; for, if the secretion does thus remain in these bronchi, it will have time to inoculate the surrounding tissues. Two factors have the principal share in influencing the elimination of the bronchial secretions—the respiratory movements of the lungs and the tenacity of the secretion itself. *The more freely the respiratory movements are made, and the more a sufficient hyperæmia is present to mix the thick cellular secretion with serum, so much the less likely will the secretion be to remain in such a part of the lung.*" "In the ordinary upright position of the body, the weight of the dependent arms is exerted on the upper part of the chest, and must restrict the respiratory movements there. This fact corresponds with the almost exclusive occurrence of phthisis in the human race." "In these same persons, it is probable that the secretions at the apices of the lungs are inspissated. According to Virchow, the thickness of a catarrhal secretion, especially the bronchi, is in inverse relation to the amount of blood in the part. It has already been shown that poverty of blood is one of the most important factors of scrofula. By poverty of blood, we mean that there is not a sufficient amount of blood properly to fill the vessels. If the amount of blood in the lungs is insufficient, in the vessels with rigid walls the blood will gravitate to the lower part of the vessels alone; if the walls are elastic, the blood will be found principally in the lower vessels. From this it follows that, in such lungs, most of the blood will be in the lower lobes and least in the apices."

Healing processes in the lungs will, I believe, be best promoted by such measures as favour rather than retard the circulation through the lungs, and which promote healthy oxidation, while they provide as much as possible for the discharge or disinfection of the infected secretions formed therein. With these few remarks, I must for the present leave this part of my subject, and pass on to consider very briefly the influence of mountain-climates in the treatment of phthisis.

d. There can no longer, I conceive, be any doubt of the fact that certain cases of consumption, arising in the plains, become arrested on migrating to the mountains. I need not go over again the evidence which numerous trustworthy observers have brought before the profession as to this fact. I have myself had somewhat unusual opportunities of judging of the influence of mountain climates, especially in the Engadine. There are, however, two interesting questions in connection with this subject which we may briefly consider now. The first is: What is the type of case which is best suited for the trial of the mountain air cure? The second is: What is the special mode of action of mountain climates in these cases? The cases that are benefited by removal to elevated districts are, as we might have predicted, precisely those which are most amenable to other plans of treatment. Cases of very advanced disease, of profound cachexia, cases with active febrile symptoms, are unsuited for such migration. All who have seen much of phthisis know well enough that a great number of cases never do so well as in the quiet and comfort of home. But a restlessness seizes on many consumptive patients, even in advanced stages of the disease, and they will not remain at home. For such cases, a southern watering-place is better suited than a mountain valley. The rarefied air of elevated regions is quite unsuited to cases in which large tracts of lung-tissue are disorganised or hopelessly disabled. With only a small amount of available breathing-space, and only very thin air to breathe,

the difficulty of breathing becomes intense, and there is always danger that such patients may die practically suffocated. I have myself seen one such death. But in cases where the disease is limited to one apex, or where the disease is chiefly catarrhal, and where there is no very intense cachexia or acute febrile symptoms, and the patient's muscular strength is good; or where the disease, though more advanced, is stationary and the general debility is not great; in such cases, removal to a mountain climate is likely to be of much service.*

The next question is, How does mountain-air act in these cases? It must, in the first place, be borne in mind that in these sparsely inhabited districts we find precisely the opposite social conditions to those under which pulmonary consumption becomes developed. The air is, as I have already said, antiseptic; it is clear, bright, and pure; and there is an almost entire absence of those organic particles which play such an important part in promoting putrefaction. The stimulating and tonic properties of the air rouse the patient to increased muscular activity and promote general nutritive changes. The temperature of the air, though lower, is more equable in the mountains than in the plains. The annual and daily oscillations of temperature are less. The rarefaction of the air necessitates greater activity of the respiratory organs; the air-cells dilate more thoroughly, and the walls of the chest become expanded; the inspirations are more profound, to compensate for the thinness of the inspired air. It follows that there is less stagnation of air in the lungs, and diffusion of the gases set free at the pulmonary surface is favoured.

These are probably but a few of the conditions which contribute to the efficacy of mountain-climates, and I regret to be compelled to pass over many other interesting explanations that have been offered as to the action of mountain-air; and, in bringing this paper to a close, I beg to say I am very conscious of its fragmentary character. But I thought the modern treatment of phthisis an important subject for the consideration of this Association, and that I might, at any rate, be instrumental in inducing others to take up some of the points to which I have alluded and work them out to a more thorough issue; for I believe, in medicine as in morals, there is no better rule than the scriptural one: "Prove all things; hold fast that which is good."

ON LIFE-ASSURANCE AND SUICIDE.

By J. W. EASTWOOD, M.D. Edin., M.R.C.P. Lond.,
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IN looking over the rules of a few insurance societies, I could not avoid observing the want of unanimity which prevailed with respect to the manner in which they deal with suicides whose lives have been insured. This induced me to take up the subject, and obtain all the information I could from the different offices in England and Scotland. My information is gained from eighty-one out of ninety-two offices, and from the actuaries or secretaries of several of these I have received valuable assistance and useful facts. The ways are so various in which the different companies treat this subject, that it is not easy to classify them briefly. The general rule is, that a life-policy is forfeited by suicide, whether the assured has been of unsound mind or not; and the following rule occurs so frequently, that it may be quoted to represent a very large proportion, which I cannot accurately ascertain, of all the insurance companies.

"Assurances in this company made by persons on their own lives who shall die by their own act, whether sane or insane, or by duelling, or by the hands of justice, shall become void so far as respects such persons, but shall remain in force so far as any other person or persons shall then have acquired a *bona fide* interest therein by assignment or by legal or equitable lien; the extent of such interest to be proved to the satisfaction of the directors."

Some offices act literally upon this rule, whilst others, retaining the

rule, modify it according to individual cases, so that their practice is more liberal than the rule itself warrants. Some of the companies return a portion or the whole of the premiums paid, others pay part or the whole of the sum assured, the directors judging according to circumstances; some refuse to pay anything, if the suicide be shown to be sane; others, again, make no difference between the sane and the insane. Occasionally, the directors weigh the evidence as to *felo de se* and judge accordingly. A few are more liberal and pay in full, as though the assured had died a natural death; and a considerable proportion pay the policy, if a certain time have elapsed after the insurance has been effected. The following table shows the numbers, as far as I can obtain them accurately.

5 always pay without any conditions, and these are the Mutual, New York, Northern, Positive, and Standard.

2 pay after 6 months' insurance.

8 " 12 or 13 months' insurance.

4 " 3 years' insurance.

1 " 4 years' "

12 " 5 years' "

1 " 7 years' "

48 pay according to the discretion of the directors.

81 Total.

In the last class, the payments are more or less liberal, and the directors do that which seems right to them, and act according to circumstances. There is much uncertainty in this practice, for there appears to be no distinct principle involved which is allowed to guide them in their mode of dealing with the insured. In those companies in which the policy becomes a positive one after the lapse of a certain time, if the assured commit suicide before that time, the directors are willing, in some instances, to take the case into consideration and to return part or the whole of the premiums, or make some allowance. Very few of them, however, look upon the matter as a question of disease, or consider that there is great difficulty in ascertaining that the person who has committed suicide is really of sound mind. Coroners' inquests are not to be relied upon for such a purpose, as it is now comparatively rare to return the verdict as one of *felo de se*. The expression, "Died by their own hands", has been suggested to form part of the rule on this subject; but this term is objectionable, as it would include accidental deaths, including a recent case where an outward application was taken by mistake for medicine. There is, however, a decided tendency amongst insurance offices to regard the act of suicide as the result of disease. Without absolutely saying that, in every case, it ought to be so regarded, it is very certain that there are few exceptions; for, even where the act is the result of a sudden reverse of fortune or domestic calamity, the shock to the nervous system is so great as to prevent the individual from recovering from the effects and thus bearing his misfortunes. Such cases as these are as much to be pitied as any other, and it is sad to see that assurance companies act on a principle which increases the distress of a family, instead of being the means of producing some measure of comfort. The result of my inquiries has fully satisfied me that insurance societies have made too great a bugbear of suicide, and have probably rather injured their business than otherwise by making such penal rules as are generally adopted, although their practice has usually been more lenient. The suicide has also been associated with persons who have been hanged by process of law: a still more objectionable circumstance, thus associating persons of unfortunate and diseased minds with the worst criminals. As there are some honourable and liberal exceptions to these views, it is only fair to give the names of those offices which have adopted a humane system, and one more in accordance with medical science; and, therefore, I have given above the names of those companies which now pay the policies without any conditions. The New York office states that "suicide, being considered an evidence of insanity, does not cause a forfeiture of policies". The Mutual has some valuable remarks in the report of the directors, which afford the best evidence to be obtained that the dread of suicide by insurance societies has been caused by themselves. From the prospectus of the Mutual, I quote the following passage.

"Suicides are abhorrent to the English mind, and in this country at least it may be safely held that suicide is always the result of a diseased mind. The new rule, freeing policies from the risk of being vitiated by suicide, came into force six years ago; the experience of the Society as to suicide over five periods of six years each is as follows.

1844-1849 ...	Percentage of suicide to claims ...	1.7
1850-1855 ...	" " ...	1.0
1856-1861 ...	" " ...	2.3
1862-1867 ...	" " ...	1.9
1868-1873 ...	" " ...	0.9

* I have lately received a letter from a patient who is now (November) at Davos, in the Grisons, intending to pass the winter there. He writes: "I have been feeling improvement, and especially have felt better since the cold began a week or two ago. I feel my nerves (or what I imagine to be so) quieted and strengthened. I find the cold much less trying than in the Engadine. I have not had any swelling of the feet or ankles since coming here, and I eat and sleep very well, and can take more exercise than before." I mention this case, because it is the second I have had under my own care in which phthisical disease had already reached an advanced stage before trial was made of change to a high mountain valley. In this patient, the whole of the upper lobe of one lung is the seat of induration, with excavation at the apex. In this, as in the other case I allude to, the first noticeable change in the physical signs was a rapid disappearance of the moist rales, the area of dulness remaining unchanged. Some cold and windy weather in the Engadine in August, soon after his arrival, tried him greatly, and his circulation became seriously embarrassed, as was evidenced by lividity of the surface and swelling of the feet and ankles. These symptoms, serious as they were, and showing how much lung-tissue was disabled, have now long since disappeared.