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ON

THE TREATMENT

OF

CANCER,

BY THE REGULATED APPLICATION OF AN

ANÆSTHETIC TEMPERATURE.

BY

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ADVERTISEMENT.

Cancer has, hitherto, been generally regarded, from its fatality and the severe protracted suffering which it causes, as the most dreadful of diseases. Every thing which has, until now, been tried as a remedy has failed; and alleviation has too often been obtained at the expense of greater evils. If agony be mitigated by the stupefying effect of opium, life is shortened by the functional disorder thereby produced. This has been especially true of the most common kind of cancer, or that affecting the womb, to which (however useful they may be in other instances) neither excision nor pressure are applicable.

Such being the state of medical science as respects this disease, it is with the greatest satisfaction that I am able to make known a mode of treatment, which not only fulfils the highest purposes of a palliative, in giving immediate relief and in prolonging life, but which also holds out greater promise of proving permanently curative than any means hitherto brought forward. The evidence adduced in support of these allegations, being the cases of persons in a public charitable institution, must be satisfactory to the most prejudiced or sceptical, as they have it in their power to see the patients, and investigate their present and past condition.

The following pages are intended to furnish as much information on the mode of applying an anæsthetic temperature as can be so communicated; for it is impossible by any written instructions to supersede the necessity of learning by observation and actual practice to employ the remedy effectually, especially in the less accessible situations of cancer. I trust that this oppor-

tunity will soon be afforded by most hospitals; and I am happy to state that the managers of the Brighton Dispensary, where the medical use of congelation originated, have, to a certain degree, granted it, by appropriating an apartment in their new building to the purpose of applying this remedy in cancer. It is to be hoped that their benevolent resolution will be followed and supported by a munificence of the character of that which endowed the cancer wards in the Middlesex Hospital; and to the extent of enabling the Institution to afford permanent, instead of only temporary accommodation to such cases of cancer, occurring in the town and neighbourhood, as may require it.

It is proper to state that great part of the subsequent observations have already appeared in a medical journal; and I am glad to have this opportunity of shewing that my extended experience, since this part was written, has amply confirmed the opinions therein enunciated. It would have been more satisfactory had I been able to report the issue of the cases of cancer related, but as, in the event of perfect cures being effected, much time may yet elapse before this takes place, I have thought it better to bring forward, without delay, what, next to a permanent remedy, is so urgently demanded in respect to this disease—a means of completely relieving its terrible pain, and arresting its rapid progress. *Experience has proved that Cancer, in its common condition and localities, may be rendered absolutely painless, without disturbing the functions of the brain or other organs.* Even were the benefit conferred by an anæsthetic temperature to be limited to this, there are few recent medical discoveries of a practical character which would exceed it in importance.

London, 34, Baker Street,
20th Dec., 1850.

REPORTS OF CASES OF CANCER, &c.

HAVING already given an account of the antiphlogistic and anodyne properties of a very low or benumbing temperature in the treatment of headache, erysipelas, and other cutaneous and neuralgic affections, as well as of its anæsthetic use in many surgical operations, in lieu of the inhalation of chloroform,* I proceed, on the present occasion, to lay before the profession some details respecting another important application of the same valuable therapeutical agent. I shall show by reports of cases of cancer treated by an anæsthetic temperature, that it furnishes us with a perfect means of relieving the pain of that dreadful disease, without producing the stupefaction and disturbance of the system which attends the use of narcotics; and that, instead of precipitating the unfortunate patient's fate, like these, congelation is not only calculated to prolong life for a protracted period, by arresting the accompanying inflammation, but may, probably, in the earlier stages of the disease, and, perhaps, by destroying the vitality of the "cancer-cell," exert a permanently curative action.

As the subject will probably be entirely new to many readers of these pages, it may be proper to give a brief account of the agent whose effects in cancer it is their purpose to describe. The very low or anæsthetic temperature that is used remedially as a local application to inflamed or painful parts, is produced,

* See a Treatise on the diseases above specified, published last year.

by what are termed frigorific mixtures, or combinations of pounded ice and various salts, which, in dissolving, reduce the temperature below zero of Fahrenheit's thermometer, or more than thirty degrees lower than any temperature hitherto employed in medicine. The application of such a mixture to the skin, or mucous membrane, causes little sensation of any kind, as the part soon becomes benumbed, and the slight tingling or smarting produced (which is seldom so great as to be complained of by the patient), is more allied to the sensation of heat than of cold. If the frigorific differs from cold water or ice in the sensations it produces, it differs from them still more in its physiological and remedial effects. There is, in fact, no greater resemblance between the effects of different low degrees than there is between different high degrees of temperature;— as, for example, between the soothing heat of fomentations, and the scalding heat that is occasionally resorted to as a powerful stimulant, or the still higher degree which, when communicated by an iron, is often used as an escharotic.

In investigating the pretensions of a new remedy, we require evidence, not only of its power of palliation or cure, but of its general safety. Large and repeated doses of opium or morphia, or copious bleedings, unquestionably alleviate the pain from cancer, but it is well known, from their effects in this, as well as in other diseases, that they as certainly prove injurious to the patient's constitution, or shorten his life. Now, there is no deficiency of evidence respecting the safety of the remedy which I have to propose as their substitute. Congelation has already been employed, thousands of times, in other inflammatory and painful diseases, without the slightest injury on any one occasion. The prejudice against this remedy, on account of its having hitherto been only known in its uncontrolled agency, or as a cause of disease, was not extraordinary, as a similar prejudice has existed against many other powerful agents, which, before they were employed medicinally, had only been known as noxious to the animal economy. Dr. Paris, in his Pharmaco-

logia, comments on this prejudice in his account of the opposition from it to the medicinal use of prussic acid, saying, that it would be just as reasonable to object to the use of the knife in surgery, because when uncontrolled or unguided by the head and hand of the operator, it is capable of doing deadly injury. To object to regulated or medical congelation because the vitality of parts of the body has been lost by long exposure to severe cold, would be as absurd as to condemn medical electricity because persons have been killed by lightning. Nor is another theoretical objection better founded, that reaction must be the consequence of shorter periods of congelation. Instead of reaction following remedial congelation, there is the very opposite condition, insomuch that parts cut in operations after anæsthesia and congelation have been produced by a low temperature, have invariably healed more quickly than under ordinary circumstances. The vessels of the part appear to be rendered incapable, for a long period, of assuming such a degree of morbid excitement as would materially interfere with the healing process.

I cannot, perhaps, more forcibly illustrate the safety with which congelation may be used in medicine than by stating, that very lately, two young ladies, resident in London, were, after having been for some time under my care, themselves employing it. One, every other day, for suppressing the nascent pustules of an acnoid eruption on the face—a purpose in which she perfectly succeeded; the other, to remove a nævus from the same locality. Were there any danger of the skin receiving the slightest blemish from regulated congelation, I should not thus have left its application to so conspicuous a part in their own hands.

But after the removal of the prejudices and misunderstandings just adverted to, another question is sure to occur to the practitioner: granting the utility and safety of this new antiphlogistic and anodyne remedy, what advantage does it possess over the numerous expedients for the removal of inflammation

and pain which we already possess, that will compensate for the trouble of applying it, and of learning to apply it properly?

In the first place, it will cure diseases and relieve pains that cannot be cured or relieved by any other known means; and where the same effect may be produced by other means, it is not produced so rapidly. A very low temperature will arrest every inflammation which is near enough to the surface to be accessible to its influence, and totally and permanently remove irritation from the nerves which it can reach. Its employment in erysipelas, in various kinds of headache, in neuralgia, and in rheumatism, furnishes illustrations of these truths.

In the second place, congelation is a safer remedy than most of those which are usually employed for the same purpose. Bleeding often impairs or prostrates the reparative powers; both antimony and mercury occasionally act as poisons; opium stupefies and excites; and events have shown that, as anæsthetics in surgical operations, ether and chloroform are not altogether without danger. Not once, in upwards of two thousand applications which have now been made of it, has congelation caused the least injury.*

Other advantages of congelation might be mentioned, but these of its greater certainty, promptitude, and safety, must

* It is not a little singular, as shewing the slow progress of important medical truths, that the anæsthetic property of cold should not as yet have superseded that of chloroform in, at least, all the superficial surgical operations. Even cold of a much less degree than that which I have usually employed, will prove sufficiently anæsthetic in certain cases, as appears by a report (in the *Lancet*, 31st August last,) of an operation in which it was employed by Mr. Nunn; although I should not then expect from it, the same power of preventing inflammation and disposing the wound to heal. Those, at least, who, from witnessing the groans or agitation of patients undergoing surgical operations while subjected to the full influence of chloroform, deny its power of preventing pain, and assert that it only prevents the usual manifestation and the memory of it, should not hesitate about the substitution of an anæsthetic, which does not suspend the consciousness.—(See the *Lancet*, July 20th, 1850.)

suffice. Cases are every day happening, where life is endangered or lost by inflammation that cannot be subdued by bleeding or the ordinary measures, without incurring greater hazard from the debility which they occasion, or other injurious effects, than if no remedy were employed; and cases of suffering, to which, from some constitutional peculiarity, the ordinary anodynes are inapplicable. That a great desideratum existed here, was strongly evinced by the recent deplorable case of a much lamented statesman, who died from injuries causing inflammation and intense pain. The medical art has never appeared to greater disadvantage than on that melancholy occasion. The inefficient measures resorted to, only showed the indications which the medical attendants were anxious to fulfil, but which, it would seem, they were unwilling to attempt fulfilling by the means in common use. What appeared to be wanting, were, an antiphlogistic remedy that would not debilitate, and an anodyne that would not excite.*

* Another expedient which I lately introduced into the practice of medicine, under the name of the "current apparatus," was had recourse to in the case alluded to—an expedient intended to regulate the temperature of morbid parts with precision, while it affords, at the same time, a means of equalizing the pressure upon them. I notice the subject principally on account of the circumstance, that a chemist, whom I requested, three years ago, to exhibit the apparatus in his shop, is now advertising it, in terms calculated to impress the idea that the merely incidental quality of softness is its principal value, and without explaining how even this advantage can be attained. As this apparatus is exceedingly simple—consisting, essentially, of a water-proof cushion, which may be made of various materials, and one or two long flexible tubes, to convey the water to and from it, without disturbing the patient or interrupting the application—it admits of being sold at a much smaller price than has hitherto been charged, or at one that would secure its general use. It is to be regretted that the proposer of such things has no control over the manufacturers or sellers of them, unless he secures this by a patent; which is an objectionable proceeding in inventions intended for the relief of human suffering.

This important auxiliary to medicine is minutely described in my work on Indigestion, published three years ago,—to which disease,

The application of an anæsthetic temperature to cancer furnishes one of the best examples of its therapeutic utility. What it may want in rapidity or certainty of curative action, as compared with others of its applications, is counterbalanced by the promptitude and certainty of its virtue of alleviation. But even were the power of congelation to be limited to this, with such a relief in our power wherever the disease is accessible, cancer would henceforth be deprived of half its terrors.

The following quotation from an esteemed writer on midwifery, will remind the reader of what was required in respect of alleviation in cancer, and at the same time render unnecessary any detailed account of the mental and bodily sufferings in the reports of the following cases, as it gives a faithful picture of the usual form of the disease :

" The most dreadful disease to which the human frame is liable is carcinoma ; and, perhaps, of all organs affected by it, uterine cancer is the most painful. This is indeed a horrible disease ; the patient's sufferings are aggravated by the knowledge that her complaint is incurable ; and she languishes under the double torment of excruciating agony and despair. In the treatment of no disease is the medical man's duty so distressing as that of cancer—to witness the increasing sufferings of his patient day after day—to hear at each succeeding visit the same unvarying statement of pain and misery, while he knows too well how poor and inadequate are the resources of his art—while he is sensible that his utmost power will not avail him beyond blunting by stupefying remedies the acuteness of bodily anguish, even if he attains that fortunate and desirable advantage—is a task that calls forth the tenderest sympathy which his nature is capable of experiencing."*

Mary R——was admitted a patient at the Brighton Dispensary

and to pectoral complaints of an irritable or inflammatory character, it is especially applicable, as affording a perfect means of maintaining an uniform heat and moisture over the diseased organs.

* Dr. Ramsbotham's Lectures in the *Medical Gazette*.

on the 25th July, 1849. She is of short stature, thin, of sallow complexion, and about forty-two years of age. She had been lately in St. Thomas's Hospital on account of the same disease for which she now sought assistance; and had complained about eighteen months previously to her entering the hospital.

Her principal symptoms were frequent and severe paroxysms of pain, chiefly in the back and hips; a profuse and offensive discharge, and occasional hæmorrhage, from the vagina; and derangement of the digestive organs. On examination, the neck of the womb was found hard and ulcerated.

For six months the usual palliative treatment was pursued—viz., the exhibition of the preparations of opium and the application of leeches. She complained that the opium made her constantly drowsy and unfit for her occupation as a needlewoman; and the pain was, notwithstanding its use, occasionally so severe as to oblige her to rise from bed and roll on the floor of her room.

In January, I determined upon a trial of congelation, having previously made another careful examination of the uterus. The disease had by this time considerably extended: the neck of the womb was now completely destroyed, and there were several warty excrescences in the upper part of the vagina. Congelation was effected by means of a frigorific mixture of two parts of finely-pounded ice and one part of chloride of sodium, introduced through a wide speculum of gutta percha, having the lower part of its upper opening of a cup-like form; and in order that the temperature might be maintained at the requisite low degree, or about zero of Fahrenheit, the dissolved ice was continuously drawn off by a syphon of peculiar construction. This peculiarity principally consists in a large two-necked bottle being connected with, or constituting part of, the long arm of the syphon; and the purpose of it is, that a stream of water may continue to flow along this part of the syphon, and keep up the suction at the upper extremity, notwithstanding any interruption in the supply there. A tube of vulcanized india-rubber forms the remaining

part of the syphon, with a small glass tube joined to it where it enters the speculum, in order that the rising column of liquid may be seen, and the flow regulated by a stop-cock.

The success of this application exceeded my expectation. So soon as I had learned to apply the frigorific properly, I was able to give immediate and entire relief, and this has generally continued complete for about a week. The discharge was soon diminished and became much less offensive, and the tendency to hæmorrhage ceased. From twenty to thirty applications of the frigorific have now been made, and scarcely any other remedy has been used. No advance of the disease appears, on examination, to have taken place, and in other respects there is decided improvement. The patient is not so thin; her appetite is tolerably good; she is stronger, and able to occupy herself in the usual household affairs.

She is directed to call whenever the pain returns. The speculum is generally introduced by herself while in the supine position, and she covers her extremities with a sheet before I enter the apartment. The nates are raised, in order that the speculum may be sufficiently upright to contain enough of the frigorific; which has usually been kept applied for a period varying from a quarter to half an hour. There is, sometimes, a slight sensation of smarting produced for a minute or two; and the pain from the disease has generally ceased within the first five minutes. If the womb be now inspected by removing the frigorific from the speculum, the greater part of its visible surface will be found perfectly white and hard. The application is terminated by allowing about a quart of cold water to run rapidly through the speculum and syphon, for the purpose of gradually restoring the natural temperature, and washing away any remaining salt.

The above report of the case of M. R. was published in the *Lancet*, in the month of August last. She is still my patient, but has much improved, both as respects her general health and the local affection. Only one short application of the frigorific has been made during the last six weeks. She has had no pain

during that time, and there is scarcely any discharge. The ulceration still exists, but it is diminished in extent, and has much less of the malignant character.

The subject of this interesting case has, during her long illness, been under the care of various practitioners. Dr. Tayler, and another surgeon of Deptford, attended her when first attacked with flooding; and on her removal to St. Thomas's Hospital, she became the patient of Dr. Barker. While under treatment by congelation, she has been seen by several who were desirous to observe the manner of applying the remedy; of whom I may mention Dr. Wilson and Mr. Furner of Brighton, and Dr. Hamilton of Paris.

The second case occurring in my dispensary practice is that of Mary P., aged 48. She has had thirteen children; and had enjoyed good health until eighteen months ago. She is thin, and her countenance is blanched by recent loss of blood.

About a year ago, she had several attacks of uterine hæmorrhage; but the practitioner who saw her, not suspecting the nature of her disease, as she had no pain nor any other symptom but the hæmorrhage, prescribed merely for the suppression of this. The hæmorrhage continued at intervals, and she was again seen at midsummer last by another practitioner, who, supposing from the history of her case and a vaginal discharge which had now appeared, that the uterus was diseased, satisfied himself of this by an examination. He discovered extensive ulceration of the neck of the womb. A mercurial injection was prescribed, and the patient was ordered to remain constantly in bed.

On the 14th of September, she again became a patient of the Dispensary; and after the house surgeon had attended her for some weeks, I took charge of the case in the beginning of October.

She was then so weak as hardly to be able to turn in bed without assistance; and very desponding from having learned that her disease was of a fatal character. The circumstance of

having lost a sister from the same malady, increased her distress. She had no appetite, and was often affected with nausea and vomiting. On examining the uterus by the speculum, a deep and foul ulcer was seen, from which a large quantity of most offensive matter proceeded, but the disease appeared as yet, not to involve the neighbouring organs. The pain proceeding from this, and referred principally to her back and hips, with shootings through the womb, was generally present, and, at times, was agonizing.

I feared that her being aware of the nature of her complaint, and her extreme weakness, would indispose her to submit to any new remedy which would render the least constraint necessary; but on my expressing this fear, she pointed to her children who were crowding the small room, and expressed a desire to submit, for their sake, to anything likely to raise her from her bed and prolong her life. I requested that I should be sent for whenever the pain, which was not then severe, should attain its more aggravated degree, which it usually did twice in the twenty-four hours.

The messenger came in the course of the evening. When I arrived, I found the patient writhing in agony; and learned that she had been in this condition for two hours. The frigorific was applied as in the case already related; but as the speculum used for this purpose was of less width than that then employed, and as it had to be introduced much deeper to reach the womb, the congelation was not so effectual. It was still sufficiently so to control the excruciating pain, which had entirely ceased after ten minutes; and in about ten minutes more, the speculum was removed. She was desired to discontinue the morphia which she had for some time past been taking, unless the pain should return severely in the night, or before I could conveniently see her again; and an effervescing mixture was prescribed with a view of abating the sickness.

Next day I learned that there had been a return of pain about two hours after I left, which lasted for about an hour,

but she had since continued nearly free from it. She was still affected with nausea and occasionally with vomiting.

On the third day, as the pain had returned, I again applied the frigorific, but in a more efficient manner. Having ascertained on the previous occasion that the vagina would admit a large speculum, I now introduced one, and continued the congelation twice as long. Still the remedy was not perfectly employed. The patient's room was small and dark; and there was not proper accommodation for preparing the frigorific with the other necessary adjuncts. Its operation was proportionally ineffectual. The pain ceased after the mixture came in contact with the womb, but it returned, I was told, almost immediately after my leaving the house, and continued with its usual severity nearly two hours. The interval, however, of comparative ease that succeeded, was longer than before; and her general condition has already improved by the opiate being no longer required to assuage the pain.

During her continuance in the apartment where I first saw her, several other applications were made, and on one occasion, nitrate of ammonia was added to the common frigorific mixture. These were all, for the reasons mentioned, more or less imperfect; though each gave immediate and complete relief, and was followed by an interval of ease, which was not, however, either so long or so perfect as is usually obtained by the remedy properly applied. The disease, notwithstanding, or the accompanying inflammation, at least, was evidently giving way; and each successive congelation appeared more useful than that which preceded it. On her removal in November to a larger apartment in another house, I was enabled to apply the remedy in the most effectual manner, as is described minutely in the following extracts from my case book:—

"November 22.—Mrs. P. has been quite free from pain, since the application this day se'nnight. It was then continued for about an hour and a half, and nearly 2lbs. of ice were expended. She had no painful sensation during it, of any kind. She has

taken no opium since; and to that I attribute her better feelings and spirits.

"To-day I applied the frigorific for about the same period, though there was no pain present—about the fourth part of the time being occupied in the application of an inferior degree of cold, in order gradually to restore the natural temperature. Freshly prepared mixture was put into the speculum four or five times."

The condition of the patient at the present time (December 14) is as follows:—She has scarcely had any pain during the last month. There is very little vaginal discharge, and it has no offensive odour. The ulcer penetrating the womb, or enlarging the interior of its cervix, is still observable, but it is decidedly less and not so irritable in appearance. She is still very weak, and retains the anæmic appearance already noticed; but she is able to dress and sit up for an hour or two daily. Her appetite is tolerably good, and there has, for many weeks past, been no return of the sickness which so long distressed her. Her greatest ailment is frequent want of sleep and restlessness at night; and for this, she is permitted to take a few drops of laudanum occasionally at bed-time.

I have other cases of uterine cancer at present under my care of which I shall not make any minute report, because, in no essential circumstance, do they differ from those now related. I shall merely make incidental allusions to them in the sequel, when illustration of particular points may be so afforded. In all of these, immediate and perfect relief is given when the application of the frigorific is made during a paroxysm of pain; and in all there is improvement in the general and local condition of the patients.

The benefit derived from congelation, in the cases of cancer just related, is not only very superior, but almost forms a contrast to that usually obtained by other palliative means. Besides that the relief from pain is more complete and lasting than that

obtained by the preparations of opium, it is gained without the stupefaction and sickness that generally attend the use of these ; and instead of shortening life, by the disturbance of its functions, as these and other palliatives invariably do, congelation will much prolong it, and prolong it in comfort, by arresting the course of the disease. Whether more is to be expected from it—whether, in the earlier stages especially, it may not possess energies equal to the complete removal of the disease—is a point that must be decided by further experience.

It has been a question, whether certain diseases, such as pulmonary consumption and cancer, which have been found to resist all the methods of treatment hitherto employed, are not necessarily fatal, or incurable, either by the powers of Nature or of Art. As respects the remedial powers of Nature in the diseases specified, this question must, unless certain observers have been much deceived, be answered in the negative. Of cancer, at least, many natural cures have been recorded ; and it is, moreover, in opposition to all analogy, to suppose that any morbid condition of the body is necessarily incurable.*

Another question, on which the opinions of inquirers have been much divided, and which bears closely upon the efficacy of the local remedies of cancer, is that respecting the seat of

* Several instances of natural cure are recorded in Professor Walshe's work on Cancer. About twenty years ago my opinion was asked respecting the contemplated amputation of a diseased breast, in the case of a lady, whose sister had died, a few years before, of cancer in the same situation, and after the operation had been performed. At that time a more favourable opinion of the efficacy of the ablation of cancer was entertained than now ; and as the tumour had all the usual appearances and symptoms of cancer in a very marked degree, I entirely coincided with the surgeon in attendance, that the tumour should be removed by excision. The patient, however, who knew how useless the operation had been in the case of her sister, could not be persuaded to submit to it, and very soon desisted from every attempt at cure. The pain soon after this gradually subsided, the swelling decreased, and nothing of the disease at length remained but a slight hardness, causing little or no inconvenience.

the disease—whether this exists in the constitution as well as in the part manifestly affected. Late microscopical investigation, by Müller and others, has thrown considerable light upon this point, by showing that cancerous growths consist, in great part, of a congeries of peculiar cells. As these morbid cells, possessing inherent vitality, may be regarded as a species of parasitic animalcule or hydatid, the oldest hypothetical notion of the nature of cancer appears, curiously enough, to have received a foundation in the latest anatomical researches.

The remedies that have been employed in cancer may be divided into two classes—the empirical, or rational; in other words, into those that have been tried independently of any directing and reasonable theory, and those to which the practitioner has been led by his knowledge of the nature of the disease, or, at least, of some of its concomitants. Valuable as empirical practices have occasionally proved in medicine—in evidence of which the use of bark in ague, and lemon-juice in scurvy, may be adduced—they have, though very numerous, been utterly without value in cancer, and consequently require no further notice. The rational practices may be divided into the following:—

1. Means of subduing inflammation. Although the notion which some have entertained, that cancer originates from, or is dependent upon inflammation, may probably be erroneous, it is certain that inflammation accompanies the disease, and doubtless hastens its destructive progress. Hence such measures as will subdue or moderate inflammation are useful, when they do not produce much debility or other counterbalancing injurious effects. Bleeding, and the application of heat or cold, are amongst the principal remedies of this class.

2. Narcotics are obviously useful in moderating, though they seldom can completely subdue, the attending pain. Their accompanying and often counterbalancing evils have already been noticed.

3. The medicines which have been employed as alteratives

cannot be altogether deemed empirical, as it is reasonable to suppose, that whether a constitutional taint exist or not, some alteration of the animal fluids or solids might prove of service. The whole of the more powerful remedies of this class have been used, and some with temporary high renown; but at present little confidence is placed in this kind of treatment. Mercury, iodine and arsenic, or a combination of these, are still, however, occasionally employed.

4. Extirpation or ablation, and the destruction of the part by burning or chemical means, are measures which, when practicable, as they generally are in external cancer, would naturally at first occur as the most certain means of cure. But the practice of destroying the part by caustics, or the actual cautery, has been condemned, as much on account of the pain and danger accompanying such proceedings as for their inefficacy; and the removal of cancer by the knife has, it is too probable, owed the principal part of its reputation to the surgeon's mistaking other tumours for cancer. The lately published results of careful statistical inquiries have been very unfavourable to the character of this operation. Dr. M'Farlane, of Glasgow, for instance, states, that of thirty-two cases of well-marked carcinoma of the breast, which were operated upon by himself, and eighty-six cases that were operated upon by his friends, not one was permanently cured. And he is, moreover, of opinion, that amputation, "while it never arrests, almost uniformly accelerates, the progress of the disease." An equally unfavourable opinion is declared by Professor Walshe, who thus concludes an inquiry into this subject: "From the facts, figures, and inferences brought forward, the conclusion is inevitable and imperative, that extirpation of cancerous growths with the knife can neither be regarded as a means of curing cancer, nor of prolonging the existence of persons affected with the disease." Does not this unfavourable issue of the operation of excision of cancer depend upon the extreme difficulty of thoroughly eradicating the disease by the knife, which may nevertheless be, at the time, altogether

of a local character? The return of the disease to the same place would render this explanation not improbable.

5. Pressure is the remedy which next claims our attention. It cuts off in a great measure the supply of nourishing blood to the tumour; and had been long employed by Desault and others in the treatment of cancer of the rectum, though with a different view from subduing the disease, before it was introduced, 40 years ago, by Mr. S. Young, of London, as a remedy of external cancer. It was afterwards extensively and very beneficially employed by Professor Recamier, of Paris; and of late years has been much improved in the mode of its application, and with proportionate advantages as a remedy.

6. Cold has already been mentioned as a remedy of cancer in the consideration of the means best fitted to subdue inflammation; but it is calculated to fulfil other purposes. It is well known that a certain degree of temperature is necessary for the maintenance or vigour of both animal and vegetable life. "In a cancerous growth (says Professor Bennett, of Edinburgh), the tendency of which is to excessive cell-formation, we evidently retard its advancement by the application of cold. Were it possible, indeed, to bring down the temperature of an entire growth below the vegetating point, we must inevitably kill it; but supplied as it is through the warm blood within, this is impossible. Still the external application of cold is one of the most powerful means we possess of retarding the progress of a cancerous or any other growth."* It is to be hoped that the

* On Cancerous and Cancroid Growths, p. 238, by John Hughes Bennett, M.D. I regret that I had not seen Dr. Bennett's excellent work, when, at the end of my Treatise on Headache, I first suggested the use of congelation in Cancer, as the strongly corroborative sentiments contained in it, would have sooner induced me to try this agent. Indeed, the knowledge which I had acquired by numerous observations and experiments, that congelation, instead of producing re-action or excitement, has the very contrary effect (not only suppressing inflammation but preventing it;) and that local insensibility is as certain a consequence of its action on parts, as it is of

opinion of this distinguished writer respecting the consequence of reducing the temperature of a cancerous growth to the degree specified, is more correct than that respecting the possibility of so reducing it; although it is proper to state, that this opinion was expressed before the publication of my investigations on the subject of remedial congelation.

As a suitable means of applying cold in cases of external cancer, the same writer adverts to one of the forms of the apparatus alluded to in a preceding note, by which a low temperature can be uniformly and long maintained in conjunction with appropriate pressure. In the appendix to my Essay "On the Present State of Therapeutical Enquiry," I included this amongst other useful applications of the "current apparatus;" and I have since had an opportunity of ascertaining its value in practice. The instrument is much more easily managed than at first might be supposed. The vulcanized caoutchouc tubes through which the current passes to and from the pressing water-proof bag, may be easily detached from the reservoir and waste vessel by the patient herself, if she wishes to rise from the sofa; and the current can be as easily re-established.

Having now passed in brief review the several rational measures which have been used or suggested in the treatment of cancer, we shall be better able to form a correct opinion of the

entirely cutting off their nervous communication with the brain,—should, at an earlier period, have led me to put, at least, its palliative property in cancer to the test of experience.

It is an interesting fact, mentioned by Dr. Walshe, in his recent able and elaborate monograph on Cancer, that congelation had already been suggested in its treatment; but evidently on erroneous views, founded on the common mistake respecting its operation which has arisen from making no distinction between a long or unlimited application of this agent, and a short or regulated one. In consequence of its being a mere suggestion, and for an erroneous purpose, Dr. Walshe (as he has had the kindness to inform me in a letter on the subject), took no note of the proposer's name, nor, unfortunately, can he refer to the book containing it.

mode in which congelation operates so beneficially as a palliative, and of the probability of its proving an effectual cure of the disease.

As a palliative, it fulfils most completely the purposes of the first two classes of remedies just enumerated—viz., those possessing antiphlogistic and anodyne properties, and, unlike these remedies, it fulfils them without any counterbalancing injurious properties.

If cancer were essentially an inflammation, according to the doctrine of Broussais, there could be little doubt that congelation would, in many of its localities, prove a cure, for no inflammation which can be put thoroughly under its influence will resist it. Or if the opinion of Professor Bennett be correct, that a "temperature below the vegetating point must inevitably kill cancer-cell," and if it be true, moreover, that the cancer-cell constitutes the whole of the disease, we might reasonably indulge the same hope. Spallanzani ascertained that few animalcula could survive exposure to a cold of Zero, Fahrenheit. At all events, as congelation surpasses in power every local therapeutical agent which does not actually destroy the animal texture, we may safely, from this, together with other considerations, conclude that no remedial means hitherto proposed is, under any management, so likely to afford an effectual cure.

The idea of using congelation in this disease was not suggested by any pathological theory, but by the observation of its effects in other diseases in some respects analogous—which, in the present imperfect state of physiology, is the most certain method of advancing therapeutical science. What instantly relieves a severe neuralgic or rheumatic pain; at once and permanently removes a distressing and long enduring pruriginous or impetiginous eruption; speedily converts a highly irritable into a healing ulcer; or completely arrests any acute inflammation within its reach—appeared very likely to be useful in cancer.

The cases, it may be said, which have been related in the

preceding pages, however confirmatory of the statement that congelation is an excellent palliative of cancer, do not strengthen the hopes, founded on the above considerations, of its proving curative; for the patients are represented as being still affected with the disease. In answer to this, it must be mentioned, that the disease was far advanced before the treatment by congelation was had recourse to; and that, probably, to prove quickly curative as well as palliative under such circumstances, either a stronger frigorific must be employed, or the same must be employed for a longer period on each application, or be more frequently repeated. How long an anæsthetic temperature effected by the means which I have described, can be continued with advantage, I have not determined. I can only say, that as I have never yet produced any injury by the longest actual congelation deemed necessary to effect other remedial purposes, I think it probable that cancer may be safely subjected to it for twice or three times as long a period as any I have hitherto tried, and that much stronger frigorifics might be safely used. Even solid carbonic acid, acting through a proper medium, may, perhaps, be rendered available. The cases reported are, therefore, by no means unfavourable to the supposition of the curability of cancer by congelation. On the contrary, the evident decrease of ulceration, or the superseding of the destructive by the reparative process, in both instances, and the marked improvement in the general health, would lead to a very different conclusion.

In estimating the effect of the application of frigorific mixtures to the animal tissues, it is highly necessary to take into account the condition of the part subjected to them, in respect to its own vascularity and the vascularity of the neighbouring parts, and as to whether it be in a state of inflammation or not. A highly vascular or inflamed part necessarily requires, in order that the same effect should be produced, a much more powerful congealing agent than a part in the reverse condition. Although five minutes is the usual period of the congelation which I apply

to the exterior of the body, when the skin and subjacent tissues are in their normal state, it was, as has been related, continued much longer in the cases of uterine cancer, and yet probably not with half the effect which it has when applied to the exterior, on account of the higher vascularity and natural heat of the part subjected to it. The difference between the periods mentioned was owing to the more or less perfect application, the time required to relieve the pain, the appearance of the congealed part, and other circumstances. In the two cases reported frigorifics of the same power were generally used, but for longer periods in the second case; because, in the first place, actual congelation was rarely, or for any considerable time, produced by it; and because there is reason to think from certain appearances in this case, that the body of the uterus is affected as well as its neck. It has been ascertained, and it is a fortunate circumstance as respects any local application, that in by far the greater number of instances, cancer of the womb, orginates in, and is long confined to its cervix.

Various modes of applying frigorifics to cancer must be employed for its various localities. That which has been described is perhaps the most complicated. When the cancer is on the exterior of the body, the frigorific can be easily applied by the small net which I have elsewhere described in speaking of the use of congelation in neuralgia and diseases of the skin. As an illustration, I will minutely describe its application to a case of cancerous breast, in the Middlesex Hospital.

It was made on the 22nd of June last. The patient, (an elderly woman, of the name of Pocock) had long suffered from severe and almost continuous pain. Her breast was ulcerated, but not much enlarged. About half a pound of ice having been put into a towel, and broken up into powder on the floor of the ward, by means of a flat iron, was quickly mixed in a jug with about half the quantity of common salt. The mixture was then poured into a small net of the thinnest silk gauze, and immediately applied to the breast, over a

circular space of about four inches in diameter. The brine as it trickled from the net, was absorbed by a moist sponge held underneath; and the net was occasionally raised, for the double purpose of watching its effect, and of stirring the mixture. The skin became white in a few seconds, and the congelation was continued for precisely three minutes. There was a slight pricking sensation produced for about half this period, which ceased upon the part becoming benumbed; and a similar sensation was experienced for some minutes after the congelation had ceased, although the greater part of what is usually felt at this time was prevented, by keeping the part covered for about five minutes with a net containing ice, and by the subsequent application of a rag dipped in cold water.

I did not see the patient again until the 6th of July,—fourteen days after the application,—when she told me that there had not been the least return of pain. The sore on the breast was clean, and even healthy in appearance; and nothing but the common water-dressing had been applied. There had been no necessity for a repetition of the morphia, to which she had been so long accustomed.

In cases of this description, it would, generally, be wrong to wait for a return of pain as a sign for the re-application of the frigorific, for the disease may advance without the accompaniment of pain; and the congelation is demanded to stay the irritation, and the progress of the malady, as much as for the alleviation of suffering.

In order that the frigorific mixture may be perfectly applied, it is necessary that the diseased surface should be in a horizontal position; and where it is denuded by ulceration, a thin membrane spread over it would act as an artificial cuticle, and prevent the smarting which the contact of the salt might otherwise cause before the production of anæsthesia.

I have mentioned that, in the case which has just been related, the breast was not enlarged. This was fortunate, inasmuch as the influence of the frigorific could penetrate the

whole of the diseased texture. In another example of this disease, in a very advanced stage, which has lately come under my care, the circumstances are not so favourable: the breast is as large as the patient's head, and requires a bandage to support it. Probably no application of cold could penetrate so great a mass; and to render it available, it would be necessary, as a preliminary measure, to remove or reduce the tumour. This is of the encephaloid species of cancer, and already has dangerous hæmorrhage proceeded from its ulcerated surface. In very large tumours of this description, unless their size can be reduced by the knife, or by the safer measure of equal pressure, it were better not to produce actual congelation of the surface, but to limit the action of the frigorific to its first or benumbing degree. For actual congelation of so large a surface, being followed by a tingling or smarting, would cause considerable annoyance to the patient, unless a continued subsequent application of a minor degree of cold, (which will always prevent this effect) could be made over the whole of the tumour. Such means, however, cannot be expected, even with respect to palliation only, to afford the complete relief of a lower temperature. When encephaloid cancer has not proceeded so far, or caused much enlargement, congelation is as effectual as in the scirrhous variety. I am now employing it successfully in such a case; and in this form of the disease, it not only alleviates the pain, but has the additional immediate advantage of suppressing the tendency to hæmorrhage. The patient, who is about thirty years of age, had been reduced to extreme weakness by a succession of floodings before the frigorific was used.

These precautions against the tingling that follows congelation, refer only to the cancers which are covered by the sensitive skin. In cancers of the womb it rarely happens that any uneasy feeling is produced. About a fortnight since, when applying the frigorific in a case where nearly the whole vaginal surface of the womb was ulcerated, I attended par-

ticularly to this point, and ascertained that there was not the least sensation either of pain or of cold.

Although the efficient application of frigorifics to external parts is, generally speaking, a very simple affair, it must not be concealed that it is very much otherwise when they are to be applied to parts so deeply seated as the womb. The practitioner must make himself thoroughly conversant with the remedy before he attempts to use it in such cases; and even the most expert will often fail in their first trials. On this account, it will be advisable that whosoever undertakes this mode of treatment, will first familiarize himself with the more easy application of frigorifics in the treatment of those diseases where it is only necessary to apply them to the surface of the body; and should the application to cancer of the uterus fail in his hands, he must candidly determine whether the failure is to be attributed to want of potency in the remedy, or want of skill or expertness in the administration of it. A few directions may be added, and a brief recapitulation made of points already mentioned, with a view to remove these difficulties; for it is proper to observe that if this treatment be imperfectly carried out, mischief instead of benefit may be the result. I have heard of a case where much irritation was caused by an awkward attempt to apply a frigorific in cancer, which was more naturally than fairly attributed to the remedy instead of the faulty mode in which it had been applied. The truth being, that if congelation be effectually made, not only is there no irritation as a consequence, but the part is rendered, for a long time, incapable of this morbid condition.

It is of importance, particularly in the first application of congelation, to choose the most fitting time; and that will generally be when there is much pain present. As this will be certainly and completely relieved in a few minutes by a proper application of the frigorific, the patient is at once reconciled to the proceeding. The greatest difficulty which the practitioner will have to contend with in very advanced cases, is that indif-

ference or apathy about remedies, and impatience of all constraint, or even change of posture, which are caused by long-suffering, despair of cure, and the effects of an habitual use of opium. To conquer aversion to any such proceeding in these cases is, as experience has taught me, no easy task. Patients so worn with disease, and soured by disappointment with other measures, become hopeless of relief but from death. It is to be hoped, however, that the early application of congelation will, ere long, be general in cancer; and although there may be a difficulty in discriminating this from other diseases of the womb in its earlier stage, it is of less importance, as congelation is, probably, the best remedy that can be used in the diseases with which it may be confounded. I have employed it with excellent effect in other affections of this organ not of a malignant character.

A speculum, or tube for introducing the frigorific, must be chosen appropriate to the case. The practitioner can himself easily make one of gutta percha, which, being a bad conductor of caloric, is well suited for the purpose. The wider the speculum, the more certainly will due refrigeration be effected, both on account of the larger surface exposed to the frigorific, and the greater facility of applying it. There is at present under my care, a case in which I have deemed it necessary gradually to dilate the vagina by a fluid pressure dilator, (an operation unattended with uneasiness on account of the equal nature of the distending pressure) to facilitate each introduction of a wide speculum.

The speculum must, if possible, be so introduced as not to excite the least irritation. The ordinary open-ended instrument is not so easily passed as when its end is closed by a ball, or oval; and in order that all inequality from the edges of the speculum may be removed, I have contrived that the projecting ball shall have the precise diameter of the speculum, by tying upon it a piece of soft membrane or leather, which is turned back upon itself, and shaped either to fill up the vacuity, or cover the edges of the speculum.

Those who are conversant with instruments invented for lithotrity, will be at no loss to conceive how a speculum might be contrived to open more widely near the womb than at the narrower orifice of the canal; but the two following suggestions of instruments calculated to pass easily in a contracted state, and be afterwards expanded, are founded on nothing yet devised for this or similar purposes. A gutta percha tube softened before introduction may be expanded by a fluid pressure dilator to any required size, which, after a short time, it will preserve; and a cylindrical or conical tube of macintosh cloth, constructed by having its double sides prevented from separating beyond a very slight degree, by the means employed in the manufacture of flat air-cushions, could, before introduction, be compressed into very small bulk. A broad spring, uncoiling after introduction, would also, with certain adaptations, answer the same purpose.

It is especially of importance that the speculum should be one that may be passed easily, when it is introduced by the patient herself or by a nurse; and care must be taken, under these circumstances, that it shall not be pressed against the diseased organ.

After the speculum has been passed, the patient's body must be raised in order to give the instrument its due elevation. In stead of a hard pillow, a strong macintosh cushion may be conveniently used for this purpose, as it can easily be slipped under the patient and afterwards distended to the necessary degree. In certain cases, and especially when the frigorific is not powerful, it may be necessary to continue the application so long as would cause fatigue, but for this facility of altering the posture, or suspending the operation of the remedy.

The frigorific is now to be applied. That consisting of ice and chloride of sodium will generally be the best if properly prepared. I have already briefly described its preparation; and must refer the reader for other particulars to the very instructive papers on the subject by Mr. Walker, in the 78th and 85th vols. of the Philosophical Transactions. The syphon, also already described, is to be used to draw off the melted ice; or

an elastic bag with a pipe may be substituted, although troublesome, and not answering the purpose so well. The application is concluded by gradually restoring the temperature, and washing away any remaining salt by a stream of cold water, as related in the first case.

A modification of the fluid dilator which has been mentioned as a useful means of preparing a way for the speculum in certain cases, is the best expedient for suppressing the dangerous hæmorrhage, to which persons affected with uterine cancer, especially of the encephaloid kind, are subject. If made of vulcanized India rubber, it would be very durable; and if it be filled through a long tube of the same material, by a screw syringe, the pressure can be controlled by the patient herself.*

Were it advisable to apply pressure to the womb in such cases, in conjunction with cold, it would be necessary to make provision that a current of cold water should pass through the instrument, in the manner already adverted to when speaking of the use of this apparatus in cancer of the breast.

An instrument constructed on the same principle, and combining the agency of cold and pressure, is probably the best which could be contrived for cancer of the rectum—for while it relieves and removes the cancer, it, at the same time, answers the important end of dilating the constricted intestine. Were a greater degree of cold required for such a case, it could easily be applied by means of a hollow tin or platinum bougie, containing one of the more powerful frigorifics.

The proper degree and continuance of cold must, as has been already mentioned, vary according to circumstances. Although a minor degree may be sufficient to relieve and fulfil all the other purposes of a palliative, a higher degree must be employed with a view to the cure of the disease, or even to afford

* For an account of the construction and use of fluid dilators of equable pressure, I refer to my Treatise on Contractions in the excretory Canals.

relief of long duration. The relation between this remedy and various forms of inflammation may, to a certain extent, illustrate its action in cancer. If congelation, of a certain degree only, be used in erysipelas of a local nature, in ophthalmia, or in the inflammation of the mouth that is produced by mercury, it arrests the morbid action and completely relieves the attendant pain; but after awhile, the disease returns, and the remedy must be re-applied. If, on the other hand, the temperature employed be lower or longer continued, the inflammation will be at once and permanently removed by it. It is possible that even a continued stream of iced water, or of a saline solution of a few degrees lower temperature, running from a reservoir through a small flexible tube into the vagina, might soon relieve the pain in uterine cancer, but no lasting relief or permanent advantage could be hoped for from such a measure, especially in the more acute cases, or those accompanied with much inflammation.*

The combination of pressure with congelation has already been adverted to, as promising great advantage in cancer; and, its use is probably compatible with most things likely to prove beneficial. The regulation of the secretious and the improvement of the condition of the blood, are important objects of treatment in cases in which opiates have been long employed, or where the patient has suffered from hæmorrhage.

* In the work which has been already published on the remedial use of a very low temperature, I have stated that "the term congelation is used rather to denote the degree of cold capable of congealing the animal fluids than this effect itself." It is a more convenient name for what it is intended to express than "anæsthetic temperature," but not so correct, inasmuch as the latter comprehends both the degree of cold necessary to congeal, and the lesser degree only sufficient to benumb, which however, may be all that, in many cases, is required. Where the influence of the frigorific is required to extend to the deeper seated textures, actual congelation of the surface will, in addition to any other virtue it may possess, be obviously useful in facilitating its transmission to these.

It is a satisfactory circumstance in connection with the treatment of uterine cancer, that the disease rarely extends from this locality to other parts of the system. Among 37 females cut off by cancer of the womb, and examined by M. Ferrus (Gazette Medicale de Paris, July 1830), seven only exhibited secondary cancer elsewhere. Another peculiarity, dependent probably upon the same unknown cause, is that cancer of the womb, should, in cases to which the operation is applicable, have been more successfully treated by amputation than cancer occurring in any other locality. The misfortune is, that the cases are rare in which this operation can be resorted to. If the womb be forcibly dragged out before the excision is made, or extirpated while in an ordinary situation, death (as ample experience has shown) is almost the inevitable and immediate consequence. Yet, when we consider that a womb which has become prolapsed from natural causes may be removed with very little danger, (a fact attested by numerous examples,) it becomes an interesting question, whether, in the early stages, and before the disease has extended to the contiguous organs, it might not, supposing all other curative means should fail, be very gradually, and without irritation, brought into the same favourable position. If natural prolapsus of the womb mainly proceed, as is commonly supposed, from relaxation of the vagina and the adjoining parts, this relaxation could be easily effected by the use of such a fluid dilator of equal pressure, as I have, on another occasion, suggested (and which I have myself employed) as a substitute for the forceps, or for excitants of uterine contraction, in cases where the birth of the child has been opposed by the most common of all causes of protracted labour—the unyielding of the external parts.

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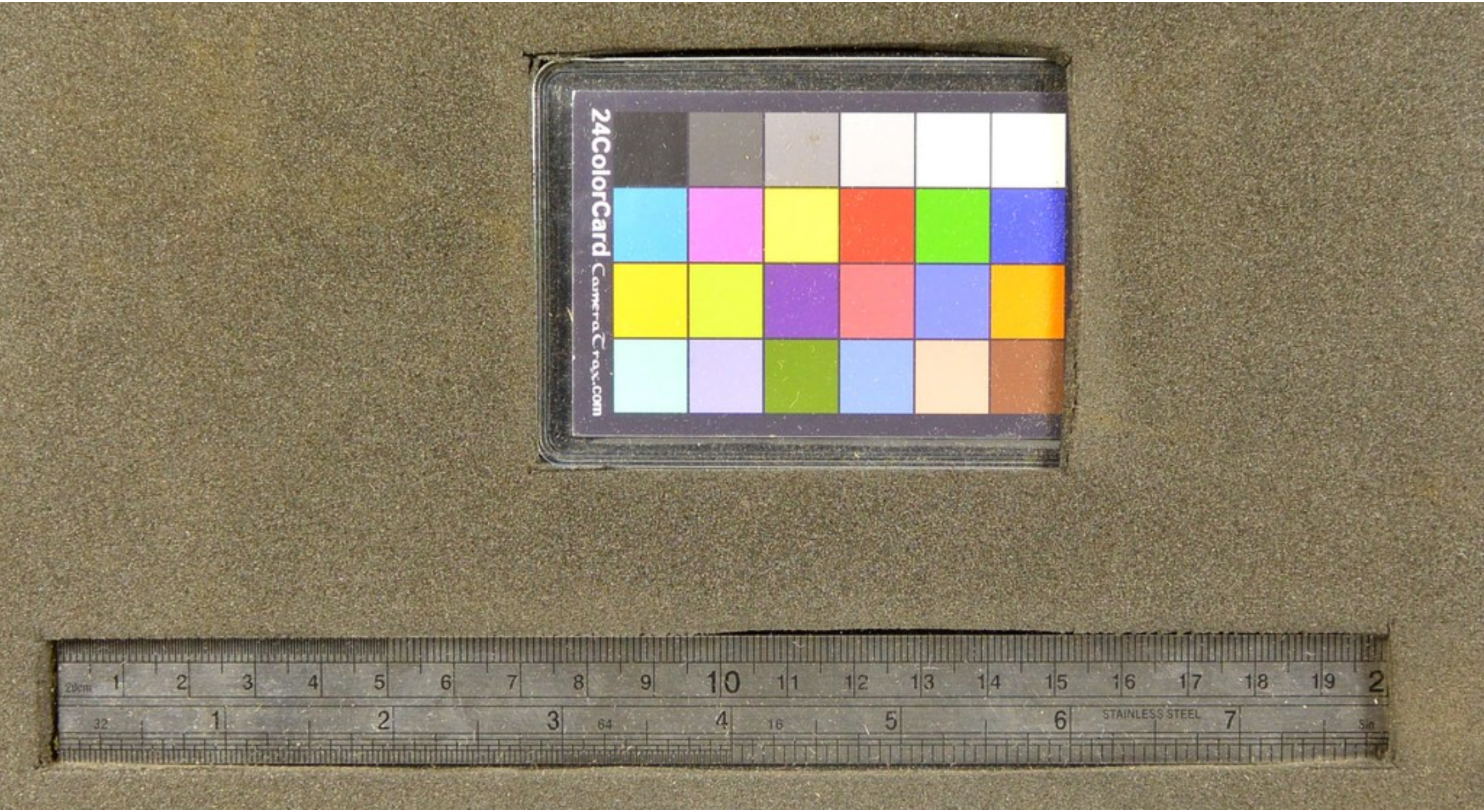
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