not remove the effluvia so effectually as chlorine, I administered the latter in combination with it. It was, however, observed that after every dose of chloroform a great calmness and inclination to sleep were produced, unattended with any adverse cerebral symptoms.

The beneficial effects which the use of these remedial means produced in scarlet fever, likewise resulted from their exhibition in typhoid fever; so that I had every reason to be satisfied with the treatment.

But the power of preparations containing chlorine over infectious fevers was known long before the disinfectant principle was discovered to exist in that gas. The celebrated Dr. Parry, of Bath, was an advocate for the use of muriatic acid, both externally and internally, in fevers; but the beneficial influence of that medicine was not referred to the chlorine it contained. That acid is now termed hydrochloric, from its chemical constituents; and in the present day, when the chlorate of potass is freely used in malignant fevers, sore-throats, &c., it is not frequently you find it acknowledged that to the liberated chlorine are the good results attributed. Read any work on fevers, from the school-book of the day to the popular *brochure* of the minute, and see what little stress is laid on the value of chlorine as an important curative agent.

Since my residence in London, numerous cases of scarlet fever have come under my care; and, with every disadvantage, in many instances, of impure air, small, ill-ventilated rooms, indifferent diet and nursing, two cases only terminated fatally, and these were seen some days after the disease had first appeared.

It must not be imagined from what has been advanced that these fevers were treated solely with chlorine, chloroform, and milk. The antiphlogistic system was invariably practised at the commencement of the attack, involving sometimes abstraction of blood, counter irritation, chloride of mercury, potassio-tartrate of antimony, and purgatives, with gargles of capsicum, alum, iodine, and chloride of lime solution. It is after the first two or three days of this treatment that the internal and external use of chlorine and chloroform is so beneficial, and the milk diet can be depended on—or, if the stomach can bear it, gruel made thick as good cream, with two-thirds milk; and when we consider what a state of irritation the mucous lining of the primæ viæ must be in, and how certain glandular structures are affected in all typhoid fevers, such a diet cannot but prove most soothing. In conjunction with these, sponging the body twice a day with tepid chlorinated water, change of linen and of bed (where two beds can be placed in the room), will contribute greatly to the general welfare and convalescence of the patient; whilst wine, ale, soups, and jellies can be deferred until the termination of the complaint approaches, or urgent symptoms demand them.

I have now brought my observations to a conclusion, with the hope that some other practitioner may be induced to publish his experiences of chlorine and chloroform in fevers.

Brompton-row, June, 1862.

ON

LOCAL ANÆSTHESIA FROM COLD, AND ITS APPLICABILITY TO THE SEVERER OPERATIONS.

By JAMES ARNOTT, M.D.

THE recent occurrence, within a short period, of several deaths from chloroform, has again forcibly drawn the attention of the profession to the subject of anæsthesia in surgical operations. That chloroform and other general anæsthetics will, by improved modes of administration, be deprived of their dangerous properties, is a hope now scarcely entertained, as every effort to accomplish this, made during the last fourteen years, has utterly failed; and the conviction has become general that it was unphilosophical, as being opposed to our former experience of analogous agencies, to expect that any means which so suddenly suspends both sensation and consciousness could be used without danger to life. The late recommendation of an American surgeon, that extreme or death-like drunkenness from alcohol should be substituted for the anæsthesia produced by ether and chloroform, is not, on this account, likely to be well received.

Under these circumstances, it is natural to inquire whether

the mode of producing local insensibility by intense or congealing cold, which has been practised and recommended by many surgeons as a perfectly safe and effectual expedient in minor operations, cannot be modified and extended to operations involving the incision of the deeper textures; and whether the suffering caused by these deep incisions, if it cannot be thus completely prevented, might not be so reduced or rendered tolerable as to make the administration of chloroform unnecessary.

The principal objection which was at first made to the production of anæsthesia by cold, that it was troublesome and tedious, it is now hardly worth while to notice. The trouble occasioned by mixing a little pulverized ice and salt, and applying the mixture by means of a bit of gauze for a minute or two to the skin (which is the ordinary mode of effecting congelation), has been found to be very little, and much less than what is required for the proper administration of chloroform. No previous minute examination of the heart and lungs is necessary for local anæsthesia; no assistant to watch the respiration and pulse, as well as to restrain the convulsive movements of the patient; no preparation of breathing and galvanic apparatus; for all of these, as we learn from the proceedings at coroners' inquests, are now expected by the public, and they all should be attended to and provided in order to lessen as much as possible the risk incurred.

Another objection to congelation was, that the reaction from it might interfere with the healing of the wound. But there is no reaction, in the proper sense of the term; instead of an increase there is a decrease of action as a result of congelation, and the antiphlogistic virtue proceeding from this effect is most valuable in preventing that excess of inflammation which so often prevents union by the first intention. This was strikingly shown by the different results of two operations performed on varicose veins in the Birmingham Hospital, one of which was done under anæsthesia from cold; and a list of nearly a hundred operations under congelation has been published by a London surgeon, in all but two of which the wound, when it was desired, healed by the first intention. Nor, so far as I know, has erysipelas ever succeeded an operation performed under this anæsthetic. It might, however, be otherwise if the congelation were by any means made to extend to the deeper tissues in the severer operations; for I have observed that when, in some of its remedial uses, it has been made to penetrate deeply, a very perceptible swelling has been the consequence, which might be adverse to union by the first intention, and, at all events, it would be necessary to bear this circumstance in mind when dressing the wound.

Sir Charles Bell, in his *Bridgwater Treatise on the Hand*, has said that the skin is exquisitely sensitive in order that it may serve as a protector or monitor to the parts underneath, which, in their normal condition, are comparatively insensible; and that it is only when the skin is cut by the surgeon that acute pain is felt. If this statement be correct (and the opinion is not confined to Sir C. Bell), it would follow that any means capable of completely suspending the sensibility of the skin would deprive the deeper operations of their terrors. This cutaneous anæsthesia can certainly and on all occasions be effected by congelation, which, in its ordinary degree, not only thoroughly benumbs the skin, but the subcutaneous tissue also. And as the healing of the operation-wound is as certainly promoted by such moderate applications of this agent, it is cruel to withhold it in those amputations which are performed without chloroform, in consequence of the patient's extreme weakness or visceral disease rendering the danger from its use greater than usual.

It is undoubtedly a great defect of congelation, that its influence, in the ordinary mode of applying it, should extend to so small a depth. Whether the danger from chloroform ought not to be reckoned a much greater defect, in comparing the two agents, is a point on which opinions will probably continue to be divided. Those, however, who insist upon the necessity of perfect anæsthesia in operations, or at least of perfect forgetfulness by the patient of his having endured pain, may conjoin with congelation such a comparatively safe dose of chloroform as will be sufficient to render the deeper-seated tissues insensible.

Other modes of producing local anæsthesia have been proposed. In a treatise on Indigestion, published in 1847, I suggested the local application of aconitine and other narcotics, but their action has been found inadequate and uncertain; and electricity, at one time so much extolled for operations on the teeth, has proved a delusion. Local anæsthesia itself has suffered in character from the disappointment caused by the failure of these and similar expedients.

Having elsewhere described minutely the various methods of producing anæsthesia by cold, whether by the application of solids, liquids, or gases, already cooled to the requisite degree, or of bodies in a state of rapid transition from the solid to the fluid or aerial form, I shall at present limit myself to a very few remarks on this part of the subject. If sufficient pressure were combined with congelation, I have no doubt its influence would penetrate deeply enough to render amputation of the limbs perfectly painless. And this simultaneous pressure and congelation could easily be effected by enclosing a portion of the limb in a cylindrical case of gutta percha with membranous endings for tying, containing a powerful semi-fluid frigorific mixture, and having rising from it a vertical tube, in order to obtain conveniently the requisite hydraulic pressure. A flat, thin, metallic bottle, filled with such a mixture, or a solid piece of brass of the same shape already cooled to below zero of Fahr., would, by being passed slowly round the limb, constitute a convenient means of congelating the skin in amputation; and it is not improbable that the principle of the new mode of making ice by the sudden evaporation of ammonia may be found applicable to the construction of a simple apparatus for remedial congelation. If a dentist were willing to incur the necessary expense of time and money, he could, in the extraction of carious teeth, or in preparing the mouth for a set of artificial teeth, benumb the alveolar process very perfectly by covering the gums with a thin metallic case made to fit with the greatest accuracy by electrotype or otherwise, through which a current of freezing brine could be passed. A current brings fresh particles of the cold body in quick succession, and the same advantage is obtained when a thin metallic vessel, containing a powerful freezing mixture, is both pressed and moved upon the part.

In the above observations I have made no allusion to the question whether the results of operations are affected by the chloroform taken to render them painless. When the operation is not severe, any increase of danger that might be produced by chloroform would not be appreciable; and certainly statistics show no increase of the mortality from these operations. It is very much otherwise, however, if the operation be in itself dangerous. Every reliable and extensive statistical report of such operations shows a great increase of mortality, all other circumstances being the same, since the introduction of chloroform. Nevertheless, many lives have been saved by etherization, for many patients would not have submitted to necessary operations without its use. As a remedy, also, of strangulated hernia, it has been highly and deservedly commended, but not in terms of higher eulogy than we find old authors bestowing on the similar virtues of tobacco. It is singular that both of these remedies of hernia should have the same defect. As respects tobacco, its fatal action in some few instances has led to its disuse.

York-street, Portman-square, June, 1862.

A Mirror

OF THE PRACTICE OF MEDICINE AND SURGERY IN THE HOSPITALS OF LONDON.

Nulla est alia pro certo noscendi via, nisi quam plurimas et morborum et dissectionum historias, tam aliorum proprias, collectas habere et inter se comparare.—MORGAGNI. *De Sed. et Caus. Morb.*, lib. 14. Proœmium.

ST. BARTHOLOMEW'S HOSPITAL.

RHEUMATIC ARTHRITIC EFFUSION, RESISTING ALL TREATMENT, CURED BY AN ATTACK OF TYPHUS FEVER.

(Under the care of Dr. FARRE.)

In hospital patients it is not uncommon for cases of disease to become complicated with typhus fever, which, thus engrafted on a previous malady, oftentimes proves fatal. Yet experience has shown that the reverse occasionally happens, and that a previously obstinate disease will wholly disappear upon an attack of fever. We might cite several examples in proof; but shall confine ourselves to one which occurred recently in the above hospital:—

George L—, aged twenty-three, a carman, was admitted, under the care of Dr. Farre, on November 14th, 1861, for rheumatic disease, with effusion into the right knee joint. This was not only very painful, but wholly incapacitated him from work. He had also a double hydrocele. The effusion into the synovial membrane persisted in spite of all the plans of treatment adopted. Counter-irritation by means of blisters and tartar-emetic ointment, mercurial liniment, tincture of iodine, strapping with soap-plaster, and other means were adopted, with but slight benefit for a time only. Iodide of potassium and bicarbonate of potass, given internally, produced no absorption of the fluid.

On the 12th of May, he was attacked with typhus fever in a mild form, and by the 26th he was convalescent. In the meantime the effusion had wholly disappeared; the joint was free from pain, and what had been a troublesome complaint for some months was now quite gone. The limb could be easily moved upwards and downwards, and flexed, without the slightest inconvenience or loss of power. There was a tendency to recurrence of effusion in June, which was obviated by the application of leeches.

GUY'S HOSPITAL.

BRIGHT'S DISEASE OF THE KIDNEYS, TERMINATING IN URÆMIA; TRACHEOTOMY; DEATH.

(Under the care of Dr. REES.)

A YOUNG man, aged twenty-one years, was admitted into the hospital on the 30th of May, with symptoms of Bright's disease of the kidneys of long duration. Relief was solely palliative from treatment, and in the course of a fortnight the symptoms of uræmia slowly set in, and he was on the verge of dissolution from this common termination of the complaint. The respiration was of so peculiar a character that it was believed there was œdema of the glottis. Although the patient was unconscious, yet it was considered advisable to give him a remote chance for life by opening the trachea. This was accordingly done; but the relief was by no means decided, and the patient died some ten hours afterwards, on the 16th inst.

The autopsy was performed on the 17th, under the superintendence of Dr. Wilks, when the kidneys were found extensively diseased, as was expected, the morbid alteration being confined chiefly to the uriniferous tubes. These organs possessed a strongly urinous odour. Dr. Wilks mentioned to the pupils present that Morgagni pointed out many years ago that a kidney that performed its functions had no odour, whilst one that did not always smelt strongly of urine. It was certainly so in the present instance. A little lymph deposit was found in the trachea, with œdema of the left side of the glottis; but it was a question whether these were not really the result of the operation itself. The thyroid gland was somewhat enlarged on the left side, and in a state of suppuration. The swelling had been noticed during the patient's stay in the hospital, and was not the result of the last measure adopted to save life.

This patient had old ankylosis of his left hip, and general wasting of the limb.

ST. MARY'S HOSPITAL.

CANCEROUS DEGENERATION OF THE LOWER END OF THE FEMUR, IN A MAN AGED SEVENTY; AMPUTATION; GOOD RECOVERY.

(Under the care of Mr. URE.)

T. C—, in his seventieth year, was admitted on the 31st of January last, with a painful enlargement of the right knee. About Christmas, 1860, he sustained a fracture of the corresponding thigh bone, just above the condyles; union took place, and he was able to get about during the summer months. Towards the latter part of the year, the knee became swollen and painful, disabling him from taking exercise. It deserves notice that for fifty years the right leg had been in a withered condition; had never, in fact, grown proportionately with the other. On admission the right knee was found considerably enlarged, exceeding the left by four inches in circumference; it was nearly immovable, the seat of acute pain, referred chiefly to the outer side of the patella, where an elastic feeling as of