41 furnished five or more cases each; the nature of the cases furnished by each are put in Table 6; again, 81 houses furnished three or four cases, which are particularised in Table 7; the remainder of the houses furnished but one or two cases each.

The analysis of these tables give the following result :—

53 houses furnished	3 cases each.
28 " "	4 " "
16 " "	5 " "
12 " "	6 " "
2 " "	7 " "
3 " "	8 " "
1 " "	9 " "
2 " "	10 " "
2 " "	11 " "
1 " "	17 " "
2 " "	doubtful.

122

The total number of cases furnished by these 122 houses was 534, or more than a fourth of the whole number, showing how prolific these fever-nests are, and how much they endanger the health of the community, which is particularly suggested by 48 of these houses having fever-houses next door to them. The kind of fever furnished by these houses is an interesting point. Of the houses furnishing five or more cases—

13 houses furnished	cases of three kinds of fever.
19 " "	simple and typhus.
4 " "	enteric and simple fever.
4 " "	typhus and enteric.
2 " "	simple only.
0 " "	typhus only.
0 " "	enteric only.

This shows that the most infected houses, as a rule, furnish more than one form of continued fever, proving that any one case of fever occurring in a house should at once direct the attention of the sanitary authorities to that house, with a view of arresting its spread, and the probable production of all kinds of fever. It is far from improbable that many of these houses which have furnished but one or two cases of fever are just commencing their career as fever-nests. I may mention that several of these fever-nests have also produced small-pox, scarlatina, measles, and cholera; of the last, I may mention the notorious house, 22, City Quay, where cholera first made its appearance in 1866.

What are the characters of a "fever-nest"? The best way to answer this question is by describing one or two. I shall begin with the worst on my list, 58, Bridgefoot Street, now celebrated as a fever-nest, defying the sanitary authorities. This house is entered from the street by a passage with a black and rotten floor, in which are open chinks communicating with the cellar below; the boards are damp and sodden with dirt; going upwards, we find things somewhat better, but the whole upper part of the house is dilapidated; going downwards, we first come to the entrance to a small back yard, a place covered ankle-deep with human filth, a privy and ash-pit totally unapproachable without passing through a sea of dirt, a water-tap running and washing such of the dirt as is within reach into a pipe-sewer which runs through the cellar of the house, and which has a hole in it, through which the sewage passes into the cellar, converting it into a cesspool. This cellar was immediately beneath two rooms inhabited by a family of fifteen, every one of whom had enteric fever. In the same street I found another house with all these characters repeated, except the broken sewer, but this house had no sewer at all—a house in Chancery Lane, which furnished eight cases of fever (seven of typhus and one enteric). I was met on entry by a horrible stink, proceeding partly from a filthy back yard, and partly from slaughter-house at the rear of a neighbouring house in Bride Street. The cellar of this house had been filled up, a very proper measure if rightly carried out, but the filling-up material consisted of such material as to fill the cellar with a decomposing manure-heap. The passage, back yard, and upper part of the house were similar to those already described at 58, Bridgefoot Street. I find similar conditions, varying, only in degree, in almost every fever-nest. The less prolific fever-nests I find with less accumulated dirt, and notably less wet dirt. In many places where there was comparatively little dirt, what did exist was made to do the maximum amount of damage by being kept in a continued state of moisture, for want of proper drainage, or from drainage-water from the roof or elsewhere running into the house by the doors, or through imperfectly or not at all closed cellar-openings. These damp cellars, often nearly filled with rubbish, are to be found in all fever-streets and most fever-houses. Many houses have no receptacle for rubbish except the cellars; this is particularly true of corner houses

and houses near corners, many of which, if not public-houses, are fever-nests.

We have next to consider the remedies for this state of things; these may be easily summed up in three words—cleansing, draining, and clearing. I believe the only cure for many of these places is a complete clearance of the ground. I consider that all closed courts should be abolished, either by an opening up to the main street, or by complete demolition of the houses themselves. Perfect house-drainage should be insisted on; all cellars should be filled up with dry mineral materials; all privies and ash-pits should be cleansed by the authorities—not left to be done by the owners, who will not, or the occupiers, who cannot do it. The person receiving the rent from the occupier should be made responsible for the proper sanitary conditions of the house; no excuse should be taken about the existence of another landlord. All tenement-houses should be regularly inspected, not by policemen, whose fellow-policemen often own or farm these houses, or collect the rents, but by proper and well qualified health-officers, and no better could be found than the dispensary medical officers. Houses where fever has once occurred, should be constantly watched and reported upon. Street-lists of infected houses should be kept, such as I made when I undertook this inquiry.

Three preventive measures seem to me to have been altogether neglected. In Dublin, no proper sanitary organisation seems to exist; there is but one health-officer, and he is badly paid; the sanitary inspectors are policemen, who go to inspect the houses of their friends; and the reports of infected houses by the hospitals and dispensary medical officers are systematically ignored until they are sent to the newspapers; but as these are matters of public notoriety, which have now gone for months without any public contradiction, I shall not further refer to them, but appeal to my professional brethren to use their influence with the public to compel the authorities to do their duty, and prevent the spread of contagious diseases in our city.

ON A REGULATED TEMPERATURE IN THE TREATMENT OF DISEASE, ETC.

By ALEXANDER ROBERTSON, M.D.,

Physician to the Town's Hospital and City Parochial Asylum, Glasgow.

AMID all the changes in medical opinion regarding the therapeutic value of the agents with which we seek to conquer disease, none have sustained their time-honoured reputation so well as heat and cold. Without exaggeration, it may be said that, in one or other of the modes in which they are employed, they are of universal application, and that their power in alleviating pain and in promoting the restoration of health is acknowledged by all. We appear, however, to be only now beginning to form a proper estimate of their exceeding importance as remedial agents in certain forms and stages of disease. In illustration of this remark, I need only refer to the observations which have been recently made on the reduction of hyperpyrexia in febrile conditions of the system, due to various causes, by means of the cold bath. In this direction, a wide field seems to be opened up, which promises richly to repay the labours of many explorers.

In the beginning of this year (February), when considering the different classes of remedies employed by medical men in the exercise of their vocation, I was forcibly struck by the fact that these agents, heat and cold, as they are used through the medium of poultices, fomentations, and cooling lotions of various kinds, are not, as a rule, prescribed with any attempt at precision. To take the case of the poultice: it is clear that its temperature often differs widely, according to the skill and care exercised by the nurse in its preparation. It is also equally evident that, though applied as warm as the patient can bear it, before long it parts with its excess of heat. But, so far as I have been able to ascertain, no exact observations have hitherto been made to determine the length of time during which it retains a temperature higher than that of the part with which it has been in contact, and how soon a renewal of the application is required. No certain indication can be gathered from the practice of medical men in treating similar conditions of disease; for some order fresh poultices every hour or two hours, while others are contented with having them changed three times a day.

Similar observations may be made with equal propriety regarding fomentations. However, they are usually changed more frequently than poultices; though, upon the whole, there is not much greater uniformity in practice.

Considering these facts, it occurred to me that in many instances it might be an advantage to maintain these agents at or near the degree of heat which was originally applied; and, further, that various zones of temperature, so to speak, might not improbably yield different therapeutic results; for instance, that ranges from 140 to 145 deg., 115 to 120 deg., 105 to 110 deg., and others down to the freezing point, might each be expected to produce effects somewhat dissimilar to those of the others, either in degree or kind, both locally and constitutionally, when continuously maintained for definite periods. Moreover, though as a minor consideration, where the maintenance of an equable temperature did not seem necessary or desirable, it promised to be of considerable importance to have it in our power to renew the heat of the original application without uncovering or otherwise disturbing the patient; as it is apparent that much of the advantage obtained by the use of the poultice or fomentation is lost in many cases from the exposure and annoyance to which the sick person is subjected by its renewal at short intervals.

As a preliminary inquiry, I thought it requisite, for reasons which I have already indicated, to institute a series of observations in order to determine how long these agents, the poultice and fomentation, as they are ordinarily employed, retain a heat higher than that of the surface on which they have been resting. I have also made a number of investigations with the view of ascertaining the direct effects of the mustard and mustard-and-linseed poultice on the functions of some of the leading organs in different forms of disease. This subject seemed worthy of special consideration on its own account; but my chief object was to obtain data, as exact as possible, with which I might contrast the results of the application of a regulated temperature, afterwards to be recorded.

Both series of observations, it is proper to remark, were made by myself. I shall first refer to the poultice and fomentation, in relation to the rate of cooling only. Certain general remarks are applicable to the inquiries with both of these agents. Thus, in both cases, the patients selected were all adult males, the great majority of whom were from twenty to forty years of age, the oldest being forty-nine. None were chosen in whom there was any material disturbance of the system. The temperature of each person was taken in the axilla before beginning the observation, and the range was found to be from 97.6 to 99.6 deg.; only two attained the latter degree, the great majority being at or within 0.4 of 98 deg. The subjoined temperatures are to be understood as the average of the results obtained for each group of cases. The Fahrenheit scale was employed throughout all my investigations.

I. Poultices of Linseed-meal.—Observations were made in forty-one cases, which are arranged in ten groups. The poultices were applied to the arm and the chest during successively increasing periods; viz., half an hour, an hour, two hours, and four hours. Some of them were covered with vulcanised cloth, others with flannel. I subjoin only one group in illustration of the others. *Group 8.*—Three cases. Poultice to chest for half an hour, covered with vulcanised cloth and under-flannel shirt. Applied at 140 deg., fell to 102.6 deg., next skin; 103 deg. next vulcanised cloth: loss 37 deg. Highest temperature on application, 144 deg.; lowest 135 deg.; highest at close, 105 deg.; lowest, 101 deg. Temperature of room, 62 deg.

Similar investigations were made with fomentation. The number of cases was twenty-two, which were arranged in four groups.

The general conclusions at which we arrive from a consideration of the results of these observations are, with respect to the poultice, the following. 1. However warm it is when applied, in the course of half an hour it will fall to within two or three degrees of the axillary temperature; in exceptional cases, it may be four or five degrees higher than the armpit, but in others it will be a degree or two lower. 2. Its loss of heat afterwards becomes gradually slower, so that at the end of an hour, on an average, it is not lower than the axillary temperature, and in a very few cases may be a degree or two higher. 3. However long it may be applied, its temperature does not fall more than five or six degrees below that of the axilla. 4. A moist poultice retains its heat somewhat longer than a dry one.

With respect to the fomentation, we find that it loses heat more rapidly than the poultice, so that even at the end of half an hour its temperature is lower than that of the axilla; but that, like the poultice, it does not descend more than five or six degrees below that point.

I need scarcely say that, in parting with their heat, these agents are obedient to the laws which regulate the cooling of heated bodies in general; and that the above conclusions might, for the most part, have been anticipated by a consideration of these laws. But though this is doubtless true, it seemed to me, from the great importance of the subject in a practical point of view, that it was desirable to submit them to the test of actual observation.

As a corollary to these conclusions, I remark that, if we consider it

right to maintain a temperature higher than that of the body in the treatment of disease, we ought to change such applications every half hour or hour. No doubt benefit is often derived from them when the heat is not greater than that of the axilla, partly, of course, from the associated moisture. But, though this is admitted, I think it is equally well ascertained that they are more beneficial when hotter than the surface to which they are applied. Even the instincts of our patients tell us so: for it is within the experience of every one that, when either of these agents is considerably warmer than the painful or inflamed part under treatment, a soothing comfortable sensation is experienced.

But, on the other hand, were we to renew the poultice or fomentation as often as the foregoing conclusions indicate to be necessary, the sick would suffer not only discomfort, but positive injury from the exposure and disturbance to which they would be subjected. It must, I think, have been observed by most practitioners, that such results do follow their renewal at short intervals. I hope, however, to show that, by means of apparatus which I have designed, this difficulty may be obviated.

We now turn to the action of the mustard poultice, and mustard-and-linseed poultice, on the functions of the leading organs of the body, both in health and disease, but chiefly in the latter condition.

Mustard Poultice.—Five patients, all men, aged from 51 to 64, except one at 22; all suffering from bronchitis, or bronchitis with emphysema, of moderate severity, with one exception, which was severe. Mustard was spread on cotton cloth, covered with muslin, and applied for thirty minutes to the front of the chest. The temperature of the poultices on application was from 76 to 98 deg.; at the close, it varied from 91 to 95 deg.

Results.—(a) *Pulse per minute.*—In three cases there was an increase, viz., from 64 to 74, 82 to 88, 120 to 126; in one case it remained the same, 70; in the other one, a decrease of six is recorded, but this man's pulse was irregular. (b) *State of Skin* in regard to perspiration.—In three cases, no change was observed; in two, where slight perspiration existed on the application of the poultice, the surface generally was drier on its removal. (c) *Respiration per minute.*—In two cases, there was no difference; in one, there were was one less, 29 instead of 30; in two others, it had risen respectively from 28 to 31, and 28 to 34. (d) *Temperature of rectum.*—Two continued the same, viz., 98.8 and 100 deg.; in two, there was a reduction in each of 0.2 deg., viz., from 101.2 to 101 deg., and from 99 to 98.8 deg.; in one, there was an increase of 0.8, viz., from 104.4 to 105.2 deg.

Two of the patients considered that they were relieved, to some extent, of pain and oppression in the chest; three did not experience any benefit.

These cases indicate that, when the functions of respiration and circulation are affected by the application of mustard in bronchitis, and probably in other forms of disease also, it is in the direction of increased exercise. It is worthy of note that, in two cases where the heart's action became more rapid, there was a decrease in perspiration.

I would direct special attention to the case in which there was an increase of 0.8 deg. in the temperature. The patient's age was 51. He had been bronchitic for many years. The poultice was applied at 8 P.M. At that time, his condition was as follows: temperature of rectum 104.4 deg.; respiration 28; pulse 120; skin dry: while at the close, the temperature was 105.2 deg.; respiration 31; pulse 126; skin dry. This aggravation of the symptoms may, no doubt, have been caused by the rapid increase of the disease; but it was more probably produced by the poultice, as it occurred within half an hour after its application. The results in this case, and in the group generally, show that the mustard poultice excites some of the leading organs to increased action, especially in the more severe forms of disease, and suggests that the morning or early part of the day is the more suitable time for applying it, so that the evening exacerbation, so common in acute disease, may not thereby be increased.

Mustard-and-Linseed Poultice.—Seven cases were observed, six males and one female. The ages ranged from 30 to 64, except one, a boy of 13. They suffered: four from bronchitis, one from phthisis pulmonalis, one from lumbago, and one from spinal disease; and the disease in each was of moderate severity. The proportions of the ingredients were, one of mustard and three of linseed, which were thoroughly mixed. The average temperature of the poultices on application was 135 deg.; maximum, 146 deg.; minimum, 121 deg. The average temperature at the close was 91 deg.; maximum, 95 deg.; minimum, 88 deg. In five instances it was applied for two hours; in two others, respectively for an hour and half an hour. The application was made to the front of the chest in five cases, and to the spine in the two others. I have classified together the five which were continued for two hours.

Results.—*Pulse.*—In three, there was a reduction varying from 2 to 20; in the remaining two, there was an increase: in the boy, aged 13, of 22,

and in the woman with spinal disease, of 10 per minute. *Temperature.*—In four cases, it was observed in the rectum. In three of these, there was no change; in one, there was a decrease of 0.8 deg. In the case of spinal disease observed (in the axilla), there was also a decrease of 0.8 deg. *Respiration.*—By an unfortunate omission, the respirations were not counted, except in two cases; in one of these, no change was noted; in the other, there was an increase of four per minute. As to the state of the skin in regard to perspiration, no difference was observed in any of the cases.

In the case where the poultice was continued only for an hour—one of bronchitis—the pulse fell eight, the temperature of the rectum was 0.2 deg. less, and the number of respirations was the same. In the other person, also a sufferer from bronchitis, but of greater severity, the pulse was ten fewer, falling from 128 to 118; the respirations were four more; the temperature of the rectum was 0.4 deg. less. No change was observed in the state of the skin in either patient.

The general results obtained, though not very decided, were in most cases favourable, more so than with the mustard alone. This observation is supported by the decrease both of the pulse and temperature in some of the patients. The boy aged 13 was, however, a marked exception, as his pulse was 22 higher at the close. Struck by this fact, it occurred to me that it would be desirable to contrast it with the effects of a similar application on a thoroughly healthy child. Accordingly, I selected for observation a lively, good tempered boy, aged 10, apparently in excellent health. The following were the conditions: 2.40 P.M., an hour after dinner; temperature of apartment, 64 deg.; in bed, under two pairs of blankets and cotton coverlet; pulse 80, of average strength. The skin in all parts was warm and soft, but not perspiring; temperature of rectum (six minutes), 99.6 deg.; the respirations 23 per minute. A poultice was then prepared, consisting of one tablespoonful of mustard and three of linseed meal thoroughly mixed, spread on cotton cloth to about three-fourths of an inch in thickness, and applied at a temperature of 124 deg. to the front of the chest, muslin intervening between it and the skin. I had intended continuing it, if it could be borne, for two hours, and purposed recording the effects every half hour during that time; but, after thirty-three minutes, he complained so much of pain, that I was under the necessity of removing it. His pulse then was 106, and there was no appreciable change in the state of the skin generally, nor in the temperature, as observed in the rectum. He complained much of pain, and was so restless that the respirations could not be counted till a quarter of an hour after the removal of the poultice, when they were 23 or 24 per minute. Ten minutes after it had been taken off, he felt the surface still hot and sore; but the pulse had fallen to 96. In ten minutes more, the pulse was 80; he was calm, and said that he was almost free from pain.

We see, then, that in a healthy child, the mustard-and-linseed poultice very decidedly excites the heart's action, and also produces considerable pain and mental irritation. From what we know of the still greater susceptibility of the very young, we may consider it nearly certain that these effects would be even more marked in a healthy infant. An excited action of the heart, pain, and mental irritation, can scarcely be regarded otherwise than evils; so that, in applying poultices either partially or entirely composed of mustard to young patients, we have to consider whether the advantage we expect to obtain will more than counterbalance the directly injurious effects of the agent itself; and also if the desired result might not be procured in some other way, either without these accompanying disadvantages, or in a subdued and milder form, if they cannot be avoided altogether.

[To be continued.]

ON THE TREATMENT OF NOCTURNAL ENURESIS AND SPERMATIC INCONTINENCE.

By D. CAMPBELL BLACK, M.D., L.R.C.S. Edin., Glasgow.

I AM induced, in consequence of the perusal of a paper by Dr. Bradbury of Cambridge on the above subjects (see BRITISH MEDICAL JOURNAL, April 8th, 1871), to make the following brief observations.

While I am perfectly willing in all cases to accept recent additions to our pharmacopœia, and accord to them their due credit, I am painfully sensitive to the inordinate enthusiasm which all such additions evoke; and I am persuaded that, in consequence, old and valuable medicinal agents are too frequently consigned to unmerited desertion. It is a pleasant thing, in the practice of physic, to be able to lay hold of ultimate facts, and my experience in the treatment of the affections under consideration affords one or two, of whose reality I am thoroughly convinced. I make a claim, therefore, for old agents of the pharmacopœia.

The analogy between nocturnal enuresis, spermatic incontinence,

and all other involuntary actions of muscular fibre, and epilepsy, which Dr. Bradbury points out, is to me not novel. A due equilibrium of nervous influence is at all times essential to normal function; and, when undue elevation or depression on either the psychical or the somatic side occurs, normal function, so to speak, becomes unhinged, and functional or organic changes ensue. The machinery—to carry out the analogy—whereby nervous influence is regulated, consists of the sensory or afferent, and the motor or efferent nerves. The sensory nerves, under the influence of stimuli, transmit, probably by molecular action, impressions to the central organ—the brain—through which they are communicated to the motor. In this manner, abnormal peripheral irritation may occasion functional disease; and, thus guided, the cause of the irritation must be ascertained in every given case, and treated as its peculiar exigencies demand. On the other hand, the very converse of this may happen, through the influence of the mind. This being the psychical disturber of nervous balance, its cause must in like manner be determined, and the appropriate remedies enjoined.

That the various secretions of the body, and many of the organic or involuntary muscular movements, are powerfully influenced by mental emotions, is an universally acknowledged fact. Thus strong mental emotions may arrest the secretion of milk; the salivary glands, in cases of urgent thirst, are stimulated to increased secretion by the mere idea of water; the action of the heart is accelerated by anger or other violent passion, or depressed, as in syncope, by fear, etc. This law—that of emotional stimulation, as it may be termed—finds expression in the old aphorism, *Ubi stimulus, ibi humorum ulterior adfluxus*.

The close relationship of functional aberration of the genito-urinary system with the brain, and consequently their mutual interdependence, is further illustrated in the distribution of the sympathetic nerve. It is peculiarly through this nerve that the conditions enumerated influence secretion. This very important nerve, or rather nervous system—that of common feeling (*cœnæsthesia*, *κοινὴ ἀίσθησις*)—is to a great extent independent of the brain and spinal marrow. It has been separated, for purposes of description, into three distinct foci: (a) the focus of generation, (b) the phrenic focus, and (c) the solar plexus. The thoracic portion of the sympathetic is situated on the side of the vertebral column as far as the last two dorsal vertebrae. During its course, its ganglia are twelve in number; and its branches are divided into branches of communication and branches of distribution. At the termination of the pneumogastric is situated the solar plexus. From this centre, accompanying the branches of the aorta as “governors”—to carry our analogy still further—of secretion, the sympathetic distributes branches. In addition, therefore, to the diaphragmatic, gastric, hepatic, splenic, suprarenal, renal, mesenteric, and aortic, we have spermatic plexuses. Besides these branches, the pelvic organs derive branches from the lumbar and sacral portions of the parent trunk; hence there are described the hæmorrhoidal, vesical, prostatic, vaginal, and ovarian plexuses. Our position, therefore, is this—that functional diseases of glands, organic muscular fibre, etc., may be either of psychical or somatic origin, *i. e.*, due either to peripheral or to central irritation; and that, accordingly, their rational treatment resolves itself into psychical and somatic appliances. I am thus a firm believer in the ancient creed which associates hysteria with some disturbance of ovarian, vaginal, or uterine cœnæsthesia; the abundant secretion of urine which accompanies this disorder clearly demonstrates the influence of the sympathetic over this secretion; while, in respect of treatment, the efficacy of some powerful mental emotion of a counteracting nature is very manifest. Thus the cold-douche treatment, which is so successful, finds explanation, doubtless, in a feeling of indignation having overcome a different mental impression; and so on. A familiar illustration of the same influence occurs in the curing of hiccup by the creation in the mind of the patient of some powerful emotion, by being charged with the commission of some derogatory act, etc.

With respect to enuresis, the disturbing influence I believe to be generally of a somatic nature; while, in the case of its prototype, spermatic incontinence, it may be either psychical or somatic, either of them, or both. Enuresis generally occurs at the periods of infancy and declining years; and, according as it may so occur, its cause admits of different explanations. In childhood, it is almost invariably traceable to the irritation of worms, congenital phimosis, calculi, or perverted secondary assimilation causing urinary density and acidity. These causes being removed, the sphincter muscle recovers its tone, and a cure is effected. But, if the hyperæsthesia have been long continued, a debility of muscular fibre ensues, and a tonic treatment is indicated in addition. In advanced life, the conditions mentioned are generally absent; and the cause of the enuresis is found in enlarged prostate, a general enfeeblement of muscular structure, and affections of the spinal cord, or calculi. Such being the pathology of this affection, I have invariably treated it with narcotics and tonics, or rather a particular