BRITISH MEDICAL ASSOCIATION:
SUBSCRIPTIONS FOR 1874.

SUBSCRIPTIONS to the Association for 1874 became due on January 1st. Members of Branches are requested to pay the same to their respective Secretaries. Members of the Association not belonging to Branches, are requested to forward their remittances to Mr. FRANCIS FOWKE, General Secretary, 37, Great Queen Street, London, W.C.

BRITISH MEDICAL JOURNAL.

SATURDAY, APRIL 11TH, 1874.

HOW COLDS ARE CAUGHT.

THERE are several well-known processes by which a cold may be caught. As a disease, there is nothing so common; and yet it is only very recently that anything like an approach to a knowledge of its pathology has been attained. There is now, however, a large accumulation of evidence which points very strongly in the direction that "taking cold" is actually "being cold".

Rosenthal has very carefully investigated the relations of the body-heat, and has demonstrated the existence of a central heat-producing area and an external heat-radiating surface. A rise in temperature is due to the disturbance of the balance normally existing betwixt these two antagonistic areas. An excessive heat-production may produce fever; or this may be due to an impairment in the cooling processes, so that heat accumulates. Precisely the opposite of this leads to a lowering of the body-temperature; if the heat be lost more rapidly than it is produced, then a "chill" results.

Let us see how this applies to colds, so frequently caught from a wetting. The clothes we wear are good non-conductors of heat, and so prevent the loss of body-heat which would occur without them. But let them become moist or saturated with water, and then they become heat-conductors of a much more active character, and a rapid and excessive loss of body-heat follows. Nothing is more certain, however, than that prolonged exposure in wet clothes is commonly followed by no evil results; that is, so long as there is also active exercise. The loss of heat is then met by increased production of heat, and no harm results. But let the urchin who has been drenched on his way to school sit in his wet clothes during school-hours, and a cold follows. No matter how inured to exposure the person may be who, when drenched, remains quiet and inert in his wet clothes, he takes a cold. Here there is an increased loss without a corresponding production of heat, and the temperature of the body is lowered, or the person "catches cold".

The effect of exercise in producing heat is well known. Unless the surrounding air be of a low temperature and the clothes light, the skin soon glows with the warm blood circulating in it, and then comes perspiration with its cooling action. Here there is a direct loss of heat induced to meet the increased production of heat. Exercise, then, in wet clothes, produces more or less a new balance, and obviates the evil consequences which would otherwise result.

The loss of heat is more certainly induced if the skin be previously glowing and the circulation through the skin, the cooling area, be active. Thus a person leaves a ball-room with his cutaneous vessels dilated, and a rapid loss of body-heat follows, unless there be a thick great coat or a brisk walk; if the clothes become moistened by rain or be saturated with perspiration, the radiation of heat is still more marked. Such is the causation of the cold commonly caught after leaving a heated ball-room. It is probable that exhaustion is not without its effect in lowering the tonicity of the vessels, and so those of the skin do not readily contract and arrest the loss of heat.

Rosenthal found that a rabbit exposed to a temperature of 100 degs. Fahr., for some time had a lowering of the body-temperature of no less than 2 degs. for two or three days afterwards. The dilated cutaneous vessels had not sufficiently recovered their tone to contract and arrest the loss of heat. Those who live in superheated rooms readily take cold on exposure. There exists a condition of the cutaneous vessels which gives a tendency to lose heat, and less exciting causes will induce a cold.

A damp bed gives a cold, because the moist bed-clothes are much better conductors of heat than are the same clothes when dry. The temperature of the body is lowered, and a cold results. Long exposure in bathing leads to similar consequences. The second feeling of cold in bathing tells that the body is becoming chilled, and that the production of heat is insufficient to meet the loss. A run on the river-bank, or a brisk walk after dressing, commonly restores the lost balance.

The plan of permitting the wet clothes to dry on the wearer is very objectionable. The abstraction of heat from the body by the evaporation of the moisture in the clothes produces a marked depression of the body-temperature, and a severe cold. This is most strikingly seen in the effects of a wetting in the tropics. The smart shower or downpour is quickly followed by a hot sun and a breeze, and the loss of heat under these circumstances is considerable. The person is "chilled to the bone", and the effects are felt for a long time afterwards. The effects of the evaporation under these circumstances is illustrated by the tropical plan of placing water in a vessel of porous clay, wrapping a wet cloth round it, and exposing it to a breeze. The water becomes distinctly cold.

The effect of a strong impression is equivalent to a longer action which is not so marked; and Béhier, in the treatment of hyperpyrexia by the cold bath, found that either a long exposure or very cold water were necessary to produce a marked impression in the hyperpyretic condition. So a sudden sharp cooling, and a longer and slower process, alike produce those lowered temperatures which lead to severe and often fatal consequences.

But if "taking cold" is "being cold" how, it may be asked, does a feverish condition result? It is the normal course of a cold to cause a high temperature and then to defervesce. This is due to a want of promptness in the regulatory arrangements.

The question of the increased production of body-heat to meet great loss of heat has been much disputed. Liebermeister, Roehrig, and Zuntz, maintain that such is the case, while Winternitz and Senator dispute it. There can be no doubt that the enormous amounts of fat devoured by the Esquimaux are consumed and go to the production of body-heat. For, however much, by the use of furs, etc., he may reduce the loss of heat by the skin, there is still the loss entailed by respiration, by the hot expired air, to be accounted for.

On exposure to cold, the skin ordinarily becomes cool and marbly, from contraction of the cutaneous vessels; so the loss of heat is checked, and the blood is kept in the internal parts, the heat-producing area. A cold bath, or exposure to cold, often causes a rise of temperature in the internal parts; and Liebermeister found that, in a cold bath, not only the loss but also the production of heat is increased, the production being in inverse proportion to the temperature of the bath. The amount of blood on the skin, the cooling surface, is diminished on exposure to cold, and so the bulk of blood in the heat-producing area is increased, and, by this combined action, a sufficient body-temperature is maintained.

Where there are an increased loss and an increased production of heat simultaneously, they neutralise each other. Where there is much muscular exercise, there is perspiration; where there is much loss of heat, there is increased production of heat. In those inured to exposure, an immediate increase in the production of heat probably exists. In others, a lack of promptness in the heat-producing processes occurs, a delay indeed, and then the chill and lowered temperature are followed by a time of increased production of heat, and a feverish condition results. Instead of the evolution of heat being instituted at the time of the excessive loss of heat, it comes on slowly and forms a reactionary disturbance—an oscillation of the balance; being much depressed, it rocks to an equal extent in the opposite direction. Habit endows the system with an educated power of maintaining the balance; disuse lessens the

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power. The more people take care, in the common way, against cold, the more susceptible they become, and the less exposure is sufficient to disturb their more mobile body-balance.

Instead of feeling any surprise that a chill is followed by subsequent fever, it is what we might *à priori* expect.

It does not follow, however, that, because there is great loss of heat, there is also a keen sensation of cold. In fact, the large flow of warm blood to the skin, or extremities, prevents the sensation of cold; which sensation is often acute when the internal temperature is normal, or even higher. Compare the cold hand, gloved or ungloved, with the glowing hands of the snow-baller; and yet, surely there is more actual loss of heat with the latter than with the former? Some people assert that it is impossible that they could have caught cold, as their hands and feet were warm. Precisely so; to maintain the temperature of the extremities, the body-temperature generally was lowered. On the other hand, a frost-bitten limb may be the price of a life. If the warm blood had not retreated to the central area, death from general loss of temperature might have resulted; the maintenance of the temperature of the periphery would probably have lowered the body-heat beyond the danger-point.

Alcohol has been abandoned in Arctic regions. It dilates the cutaneous vessels and increased the loss of body-heat. The drunken man perishes of cold when the abstainer survives.

When the exposure follows a long continued warmth, the cutaneous vessels do not contract, but become dilated or paralysed, and then a large bulk of warm blood courses through the cooling surface, and a great loss of body-heat is entailed. Not only so, but the current of chilled blood passes inwards to the right heart and the lungs. Inflammations of the lungs are common along with severe colds; and this is possibly the explanation. Such inflammation is specially liable to occur if at the same time cold air be inspired. The cold respired air and the current of chilled blood together produce those vaso-motor disturbances in the lungs which, in their graver aspects, are known as pneumonia.

At other times, the weakest spot of the organism, the point of least resistance, habitually suffers when the system is chilled and the hyperæmia of the internal parts becomes excessive or uncontrollable.

Let us now see how far we can elucidate the frequency of affections of the respiratory tract co-existent with severe colds by the foregoing explanation. When cold air is respired, it is more than probable that there is instituted a condition of protective hyperæmia of the lining of the respiratory tract. The air we breathe is normally heated by the vascular lining of the turbinated bones and other parts of the respiratory tract; and excessive hyperæmia of these parts, in the system lowered by a great loss of the general body-heat, becomes, in all probability, the nasal catarrh with which we are familiar. Or the pharynx or larynx may suffer in a similar manner. This is rendered all the more probable by the fact that a nasal catarrh and affections of the lungs or bronchia are not found together; except when the nose has become so "stuffed" that it is no longer available for respiratory purposes, and then the air breathed through the mouth is imperfectly warmed, and we have bronchial or pneumonic mischief, as we have after tracheotomy. Bronchitis and pneumonia are very common in children who breathe much by the mouth, so that the respired air is insufficiently warmed; especially is this the case in cold and miserable children who cry much.

There would appear to be a species of antagonism betwixt inflammations of the external and internal portions of the respiratory tract, and they are rarely found together; nor is this unintelligible after the foregoing considerations. That the hyperæmia of the respiratory organs is protective, like the glow of the snow-baller's hands, we cannot doubt; but if this be disturbed by general body-chill, and in the lungs still more by the cold blood coming in from the cutaneous surface, it is not improbable that the hyperæmia may pass into inflammation.

The practical considerations which are the outcomes of this review of the pathology of cold are these. Never to wear wet clothes after active muscular exertion has ceased, but to change them at once; to meet the loss of the body-heat by warm fluids and dry clothes; to avoid long sustained loss of heat which is not met by increased production of heat; to increase the tonicity of the vessels of the skin by cold-baths, etc., so educating them to contract readily on exposure—by a partial adoption, indeed, of the "hardening" plan; to avoid too warm and debilitating rooms and temperatures; to take especial care against too great loss of heat when the skin is glowing; and to prevent the inspiration of cold air by the mouth by some protecting agent, as a respirator. We can readily understand how a respirator should be an effective protection against winter bronchitis in those so disposed.

The relations of the production and loss of heat are not alike in different persons. Some have a high production and little loss of heat, and such persons bear exposure well; they do not readily catch cold, and are commonly too warm. Others, again, bear cold badly; they lose heat quickly; and in winter they are chilled with cold. Old people bear cold ill; their heat-producing power is low. Children are susceptible to cold from their comparatively large surface, or cooling area. The anæmic bear exposure ill, from deficiency of red blood-corpuscles and consequent impairment of the chemical interchanges. The convalescent easily takes cold, from the system not having recovered its resistive power, and from lack of promptness in the regulatory arrangements.

THE EXCESSIVE MORTALITY OF CHILDREN.

MR. JOHN LIDDLE, in his last quarterly report on the sanitary condition of the Whitechapel district, discusses the causes and remedies of the excessive mortality of children in the metropolis at length, and with characteristic ability.

The causes of the large mortality of children in the metropolis may, he considers, be to some extent accounted for—

1. By the general ignorance of the principles of the laws of health.
2. By improper nursing of children, and leaving them in the charge of young children, who are not sufficiently robust to carry them properly in the streets. Even when in charge of the mother, they are exposed without sufficient covering to protect them from the cold and damp.
3. By the ignorance of mothers, as regards the absolute necessity of their infants breathing pure air, as is too frequently shown by the keeping closed the window and door of the living and sleeping-room.
4. By hereditary disease in many children.
5. By the intemperance of parents, who, from repeated drunkenness, are unable to attend to their children.
6. By the deficiency of food.
7. By the use of improper food.
8. By the neglect of offspring, especially of those which are illegitimate.
9. By the want of artificial warmth.
10. By the overcrowding of rooms.
11. By the administering to children of opium, and other narcotics.
12. By the defective sanitary condition of the localities occupied by the poor.
13. Numerous deaths of children, who are born of drunken parents, are caused by convulsions, and other diseases of the nervous system.

Some of the causes of the large amount of mortality of infants under one, and of children under five, having been stated above, it is a question of great importance to all persons who are ratepayers, and especially to those who are not only ratepayers, but who devote much time and money in the promotion of charitable and philanthropic objects, to inquire how this excessive death-rate can be diminished. It is a question well worthy of consideration, whether it would not be much better to expend money in the prevention of disease and of early death, than in mitigating those sufferings of the poor which are occasioned by sickness and poverty. Large sums of money are constantly being spent in the very questionable benefit of erecting buildings for the houseless poor, in the distribution of articles of food to the necessitous, in the supply of coals, blankets, etc., which might, probably, be better applied to the prevention of the numerous evils incidental to poverty.

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For the purpose of ameliorating some of the evils which he thus enumerates, he proceeds to consider what can be done by the Local Sanitary Boards, by private individuals, and by charitable institutions, by Boards of Guardians, and by the Metropolitan Board of Works.

Something may be done by the several Local Sanitary Boards to benefit the health of the poor, so as to enable them to perform, in a better manner, such work as they may be able to procure :—

1. By causing all the narrow courts and streets to be cleansed daily, and the pavements in all the narrow and confined places to be kept in good repair. And here, Mr. Liddle asks, is it reasonable to expect the poor to keep the interior of their houses clean, when the narrow places in the vicinity are in a filthy state? It is, in his opinion, of far more importance to the health of the district to keep the localities where the poor reside in a cleanly state, than the wide thoroughfares. The stench arising, while some of these localities are being swept, in damp weather, is sometimes most abominable and sickening, for the majority of the poor inhabitants throw all their slops and filth into the public ways; and, when these are stirred up by the scavenger, the nuisance may be readily conceived.

2. By causing a constant and strict supervision to be given by the sanitary officers to the condition of the interior of the houses of the poor, so that overcrowding may be prevented, and the ventilation of the rooms, where defective, improved.

3. By the prompt removal of all nuisances likely to injure the health of the people.

4. By insisting that all the places occupied by the poor shall be supplied with water on the constant service, so as to do away with the butts and cisterns now in use therein.

The existing evils which are in operation, in producing the low moral and physical condition of the people, may be, to some extent, alleviated by private individuals, or by charitable associations :—

1. By purchasing some of the worst property in the most crowded districts, and so improving the sanitary arrangements in the houses as will enable the occupiers to live in decency, and engender feelings of self-respect. This suggestion can only be carried out by the new owners making frequent visits to each tenement, and kindly giving to each family a few words of advice on those subjects which relate to health; and if the accommodation in such houses be better than, and as cheap as, that in the contiguous houses, the tenants will readily put in practice the lessons they receive, for they will be informed that, unless cleanliness be observed, the parties must remove.

2. By using efforts to get the children of school age instructed in some of the elementary schools, and, if possible, to remove them from the contaminating influences of their homes.

3. By giving instruction to the parents in the proper management of children.

4. By discouraging the too prevalent custom of investing money in burial-clubs; and, instead thereof, endeavouring to induce the heads of poor families to become members of provident dispensaries, where, in time of sickness, medical attendance will be afforded. The extension of these institutions will be the means of inducing feelings of self-respect among the poor, by enabling them to procure, from their own resources, the needed assistance, instead of causing them to apply to the workhouse authorities; for we find that the first step in the downward path to pauperism is, when sickness occurs in a member of a family, that application is made at the workhouse for an order for the union medical officer; then, they having once found their way to the workhouse, and thereby become paupers, the downward course is continued. This example is followed, and thus the whole locality soon becomes pauperised.

5. By endeavouring to induce the poor, in times of prosperity, to invest small amounts in penny savings' banks.

6. As regards drunkenness, and the two-fold evils mentioned as consequent thereon, the only plan that can be suggested for diminishing this evil is to instruct the people by intercourse and example, and to remove the children to schools.

How far Boards of Guardians can contribute in carrying out the amelioration of the destitute class living in the unhealthy localities, by industrial schools, is a question which Mr. Liddle leaves for their consideration. If the children be left to the guidance of their parents, they will probably become paupers.

The best plan of improving densely crowded localities, which presents itself to his mind, is for the Metropolitan Board of Works to obtain powers for the compulsory purchase of lands and houses which are unfit for habitation, and sell the ground, either to private individuals or public companies, for the purpose of erecting suitable houses for the use of the working-classes, according to plans prepared by their surveyor, and approved of by the Board.

So long as the poor are suffered to remain huddled together in the several narrow courts and alleys in London, into which no other persons, except the police, relieving officers, medical officers of the union, and sanitary officers, enter, little or no improvement can be expected to take place in the moral, physical, or intellectual condition of the people. It is necessary to the well-being of a community that the rich and the poor should live in accessible proximity to each other, and should not be separated in the manner they now are in London—the wealthy occupying the wide thoroughfares, and the poor the bye and narrow places on each side of them, so as to be out of sight, and, alas! too frequently, out of mind. So long as this state of things exists, the poor and ignorant have little prospect of becoming improved; whereas, if the habitations and localities of the poor were thrown open to public view, by widening some of these confined places, the inhabitants thereof would profit by the example of their richer brethren. Much has recently been done in Glasgow, under the powers of the renewed Improvement Act, 1871, which enable the Lord Provost, Magistrates, and Council of the city, for the purposes of this Act, to take houses and lands compulsorily, to make new streets, to alter old ones, to purchase lands and houses by agreement, to erect new buildings, to dispose of land by lease or feu for building purposes, etc. By these powers, the authorities have extirpated seats of contagious fever, and have greatly improved the moral and physical condition of the people; and this has been done without inflicting any suffering upon the poor.

M. VILLEMIN has been elected a member of the Section of Medical Pathology in the Academy of Medicine, Paris. At the final scrutiny, he obtained 43 votes, M. Jaccoud having 34.

MR. WILDERS has been elected co-Professor of Forensic Medicine in Queen's College, Birmingham. Mr. Wilders has been for several years one of the Professors of Materia Medica, and is one of the surgeons to Queen's Hospital.

THE "Alumni Society" of the College of Physicians and Surgeons of New York are endeavouring to raise by subscription a fund of 100,000 dollars, for the purposes of establishing laboratories for the prosecution of chemical, physiological, and pathological experiments, and of founding a chair of Pathological Anatomy in the College.

DR. F. RIEGEL, of Würzburg, has accepted an invitation to the post of Director of the Medical Department of the City Hospital in Cologne. His acceptance was conditional on compliance with the condition proposed by him, that a physiological and chemical laboratory, and other means of carrying on scientific and clinical work, should be attached to the hospital.

STREET-NOMENCLATURE IN FRANCE.

THE Mayor of Bordeaux a short time ago addressed a letter to the President of the Society of Medicine and Surgery in that city, stating that it was the intention of the authorities to name some streets after distinguished natives, and asking for the names of some eminent medical Bordelais. The Society has, in reply, transmitted the names of Desault, Aran, Cazeaux, and Desgranges. Bordeaux already possesses streets bearing the names of Magendie, Guérin, Gratiolet, etc.

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