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SUMMER AND ITS DISEASES

WILSON

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THE SUMMER

AND ITS DISEASES.

BY

JAMES C. WILSON, M. D.,

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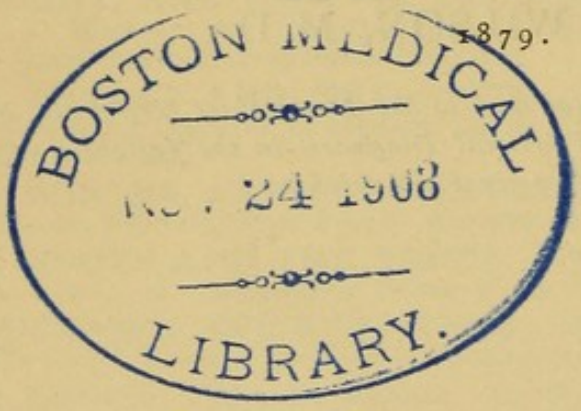
PHILADELPHIA:
P. BLAKISTON, SON & CO.,
1012 WALNUT STREET.
1885.



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THE *merry Earth, flying through space, swinging as she goes, turns first one side of her fair face and then the other to the kisses of her lord, the Sun. Where the caresses of his life-giving rays fall lightly, she shudders and grows pale. Nature sleeps, and Man, in the discontent of winter, awaits with longing the return of spring. Where they fall full and ardently, blushes of love and smiles of plenty brighten her beauty. Nature awakes to loveliness and abundance, and the children of Earth are blessed in the open-handed fruitfulness of the glorious Summer.*

But man, born to sorrow as the sparks fly upwards, finds some pain in every pleasure, some sadness in all joy, some fear in every hope. The changing seasons remind him that the seed is not quickened except it die, and each one brings to him, as it comes with its many blessings, some new suffering and sickness.

THE SUMMER

AND

ITS DISEASES.

CHAPTER I.

THE SUMMER.

THE object of the following pages is to point out some of the peculiarities of our summer climate; to show what season-influences at that time act unfavorably upon the public health, and to suggest such means as will best enable each individual to escape the sicknesses peculiar to summer by avoiding the causes which give rise to them.

Preventive medicine is the latest and highest development of the Healing Art; to discover and study the causes of sickness, and to point them out to the people, that they may destroy some of them and avoid others, is a more reasonable and more effectual mode of warfare upon disease than the mere endeavor, however energetic and skilful, to combat maladies

already established, whilst their neglected causes are left to do evil work upon the health of the multitudes who expose themselves blindly to unknown and unsuspected dangers. To be warned is to be prepared, and a little prevention is better than much cure.

Our summer is remarkable not alone for the notable contrast to the winter which it presents, by which we experience in the course of a few short months the rigors of cis-arctic climates and the broiling heats of sub-tropical skies, but it is also remarkable for its long-continued, unbroken high temperature. The marvellous adaptability of human beings to varying climatic conditions enables us to bear the great and rapid, but orderly, changes of the seasons with comfort, and even to find in them an almost perennial source of physical and intellectual pleasure; but the protracted heats of summer exhaust us and depress us; they wear us out by their very sameness; they call into being around us innumerable noxious influences that they make us the less able to withstand; and they tempt us to many direct violations of the laws of health which in more comfortable days would be unthought of.

The following table of the mean temperature of the different months of the year is compiled from the statistics of the signal office at Philadelphia, one of the most healthful of the large cities of the world. Although a commercial port, it is an inland city, and

possesses a climate unmodified by nearness to the sea on the one hand, or by mountain ranges on the other. Such references to exact official observations as may be necessary to illustrate or confirm the statements of this little volume will be founded, unless otherwise stated, upon the Health Office Reports, and other similar publications of the same city — the climate of which is taken as a type.

TABLE

SHOWING THE MEAN TEMPERATURE OF EACH MONTH, AND THE AVERAGE MEAN TEMPERATURE OF THE SEASONS DURING TEN YEARS ENDING 1876.

Dec., 33.92° F.	Mar., 39.16° F.	June, 73.54° F.	Sept., 67.72° F.
Jan., 32.72 "	April, 53.36 "	July, 78.74 "	Oct., 56.03 "
Feb., 33.12 "	May, 63.24 "	Aug., 75.92 "	Nov., 43.34 "
Winter, 33.25° F.	Spring, 51.92° F.	Sum'r, 76.07° F.	Autu'n, 55.69° F.

It is thus seen that the arbitrary division of the year into seasons is sustained by the recorded monthly temperature during a long period, each season-group of three months showing a marked difference from that which precedes and that which follows it, whilst the mean temperature of the months constituting the group is, with few exceptions, nearly the same.

July is by far the month of highest temperature; but the latter part of June is often very hot, and the mean temperature of August is brought down by the

increasing length of the nights. The days are quite as hot, and there is a dampness in the sultry air that makes the heat still more oppressive. It is the month of summer mists and fogs. Organic matters undergo rapid decomposition, and neglected drains and foul places about the dwellings of men pour forth emanations which sap the health and the life of the inmates. Some give warning by the stenches which attend them; but others — and it is thought that they are the most potent in their effects — are odorless, and strike, assassin-like, without warning. In this month, also, food-substances change most rapidly, and errors in diet are easily, often unwittingly, committed, with swift retribution.

The thunder-storms which are so frequent during the summer do excellent work in flushing water-ways and drains, and in altering the electrical tension and the physical condition of the atmosphere; but they are not infrequently the cause of sickness and death by lightning-stroke, by the sudden chilling of those caught without shelter, and especially among infants and children, by rapid chemical changes produced in the milk, which constitutes their chief food.

The heats of summer favor the disengagement of that obscure but potent entity called "malaria" in regions favorable to its production; and much of the sickness of the late summer and of the autumn is due to exposure to its influence.

Finally, one of the most prolific sources of sickness in summer lies in the power of confirmed habit in many people, and their inability to adapt themselves temporarily to the circumstances of the season. In tropical countries, the daily life of the people is arranged in accordance with the climate. The bustle and activity of cooler lands are replaced by repose and tranquillity; the struggle for wealth is scarcely known, and the means of a bare livelihood are so easily procured, that the keen stimulus of competition, which makes life so hard elsewhere, is but slightly felt; food is taken in smaller quantities, and it is of a lower heat-producing kind; clothing is light in color and in texture; the business of life is transacted in the cool hours of the morning, and its social pleasures enjoyed in the long, starlit evenings; whilst the hours of the strong, hot mid-day are calmly passed in a shaded hammock in undisturbed siesta. But with us the case is different. In the most exhausting "hot spell," the hours of business are but little abridged — the restless, eager life of the year is carried into the summer. Instead of arranging the day so as to spare himself, the American nerves himself up to endure the hardships of the hottest weather, and too often eats and drinks that which it is his custom to live upon the year round. Even in his recreation his old habits cling to him, and he vainly seeks relaxation in the stifling theatre, the crowded

and fatiguing excursion, the glaring hop, or in the exhausting restlessness of rapid travel.

The diseases peculiar to summer arrange themselves in two groups.

I. Diseases due to the direct action of intense heat and prolonged high temperature upon the tissues of the body:

Sunstroke.
Heat fever.
Exhaustion from heat.
Simple continued fever.
Diarrhœa (a group of cases).
Cholera infantum (a group of cases).
Some affections of the skin.

II. Diseases due to morbific influences generated by the action of the high temperature of summer upon the surroundings:

Diarrhœa and dysentery.
Cholera infantum.
A group of fevers (non-malaria).
Malarial fevers.
Hay asthma.
Colds (from sudden changes of temperature).
Affections of the skin { caused by certain articles of food. / from insect bites and the like. / from poisonous plants.

Several affections are set down in both of these groups for the reason that they frequently arise from each of the general causes. As an example may be especially mentioned cholera morbus, which must often be attributed to exposure to exhausting heat, without the concurrence of traceable errors in diet or living, on the one hand, and which more frequently is directly due to the eating of unwholesome food and like acts of imprudence, on the other. My observation has satisfied me as to the evidence that the formidable group of infantile disorders, which will be best recognized by its old name of cholera infantum, is also largely due to the depressing influence of heat alone; whilst, as all the world knows, it is frequently produced by alterations in the food.

To escape the diseases of summer, there are two courses — one is to conform our lives to the requirements of the season, the other to take refuge in places where the heats are less intense.

Spring fever is more than a carelessly given synonym for laziness. No thoughtful person can observe the wide-spread sense of weariness, the effort which attends continued bodily or mental work in the spring, without recognizing that there is a real meaning in the term. At this season the bodily forces are below par, something of power has been lost by the hard work of the winter that must be regained before the strain of another winter begins. The observation that

many persons habitually lose weight in the spring, to regain it in the autumn, confirms the view that there is a spring-period of health and strength depression. The custom of taking a summer holiday, and the eagerness with which it is looked forward to, are alike founded upon the real requirements of hard-working men and women. The clerk's "two weeks off" is not merely a season of pleasure and amusement; it is a necessity for his body, if it is to be kept healthy. It is not alone that he escapes for a brief time the stifling air of the city and the shop, and his hours of daily toil; but it is that he has the repose which comes from complete change of scene, from long restful reaches for the eyes, weary with months of keen, close looking; from the many-tinted green of sloping fields, from the quiet beauty of shady woods and deep clear waters, and fresh skies, and the ever-changing sea, and the peaks of mountains that change not — it is this that does him good. The man is to be pitied that cannot have his summer holiday; a thousand times he who cannot enjoy it. To conform one's life to the demands of hot weather calls for the observance of a few simple rules: The daily bath on rising, to be repeated with warm water on going to bed, if the heat of the nights be so great as to prevent sleep — many a time, after hours of restlessness, has sleep followed quickly upon a *warm* bath; to wear the lightest of gauze-merino underwear for the body, and linen or

cotton for the legs, and outside stuffs light in weight and color, and loose-woven; to live upon a simple diet, bread and butter, milk, sound ripe fruit, vegetables, meat sparingly, and non-stimulating drinks taken slowly. I find no harm, for those who like them, in the light beers, or claret and water at dinner. Above all, it is important to take life easily, to make haste slowly, to keep the body tranquil, and the mind serene. We ought to rise with the dawn, and to have done all that is possible of the day's work before the sun is high. An hour's light half-slumber in a darkened room at mid-day tends to keep the internal temperature down. In a word, the life in the tropics is to be imitated. Excitement, hurry, the direct rays of the high sun, strong drinks, much meat and tiffin are to be eschewed. It is only for a season; frosty mornings and sharp east winds will soon make these things bearable again.

As I write these lines, to-night, hundreds of households are discussing the question of where to go for the summer. Many voices mingle in praise of different modes of spending the summer, and of various places in which to spend it; but all agree in this, that their owners must go away. From that opinion there is no dissent, except, perhaps, in the unspoken thoughts of the head of the house, who ponders weighty questions of expense, and the long duration of hard times.

Ah! curly pates, you are for the country and a

farm-house, are you? Such fun, is it? You are right — it is just the place for you. It gives you plain, wholesome food — such milk and eggs, and such bread and butter, and luscious fruit, that you wait and long for as it ripens! But you must have a care that it is ripe. It gives you change of scene and fresh air, and early hours and such delightful tiredness, that you fall asleep while they are undressing you, as you ought, for you have had a glorious day. For you, my boys, the farm is an unending, summer-long delight. Never once, till it is time to go back to town and to school, will you utter that saddest of child-laments, "I wish I had something to do." The farm is a practical menagerie, which is open all day long, and don't smell badly. To be sure, there are no tigers; but there is much natural history to be learned in the stable and milk-shed and the pens, and *there used to be bears in the woods beyond the mill!* It is better than any circus you ever saw, for you can ride yourself, sometimes,— to the blacksmith's shop or to the mill. There is work for you to do. You can help in the hay-field, if you like. Certainly, you can roll in the fresh hay, and lie upon it and toss it about. How sweet it smells! Perhaps the men will take you home on the last load. Was there ever anything so exciting, as when they shout and the horses rush, and you sweep up into the shadowy barn between the teeming, fragrant mows,

and all grows suddenly silent, for the crop is in? Then there are nine hundred and ninety-nine other things to do,— dams to build, and wading and fishing. It is not likely you will catch more than a minnow or two and a little sun-perch; but it 's great fun to dig the worms.

We might go on for hours talking about this summer life on a farm, for I know it well, and loved it years ago, just as you love it now. And I am sure of one thing, and that is this,— it is the very best of all places for the youngsters. It is not a bad place for the baby, either, if there be plenty of shade around the house, and not too much on it. But it must be a real farm — not merely a fashionable boarding-house in the country. Aye, to be sure. What? You don't like the nap after dinner? But, my little man, it is necessary; it was the doctor's strictest order. You would never in the world stand the work you do without it.

For children of an older growth, the monotony of simple country life is wearisome. Its gentle pleasures pall upon senses used to the more highly-seasoned, piquant viands of city life. One must have society, perhaps, and new faces about him. To meet the wants of such, who desire neither the mountains nor the sea, or who may be compelled to abide near the city, hotels and huge boarding-houses have sprung up on the lines of many railroads. They have their ad-

vantages and their disadvantages. You have change of air, and fields instead of bricks to look upon; if not a new society, at least a gossippy rearrangement of old acquaintanceships, and plenty of good roads for riding or walking, over a fair, rolling country, with anon a vista through noble trees, or a fertile valley with its silver stream, spreading out from a far-off point till it widens at your feet into a rich cornucopia of earth's blessings. But for children these places are ill-suited; the life is too artificial and too far from nature. Besides, there are too many of them crowded together. And they must, God pity them, be dressed and dance. The very selfsame things that make life in these huge hotels of the railroad lines unfit for children, make it unbearable to some older folk.

The effect of constant evaporation, of the sluggishness of the ocean in absorbing and in giving up its heat, and the resulting alternations of land-breeze by night and sea-breeze by day, make insular and maritime climates much more equable than those of continental inlands. Hence the apparent paradox of sending invalids to the sea-shore in winter to be warm, and in summer to be cool.

TABLE

SHOWING THE HIGHEST AND LOWEST TEMPERATURE AND THE RANGE ANNUALLY, FOR FOUR YEARS, AT PHILADELPHIA AND AT CAPE MAY.

	PHILADELPHIA.			CAPE MAY.		
	Temperature.			*Temperature.*		
	Highest.	Lowest.	Range.	Highest.	Lowest.	Range.
1874	97.° F.	10.° F.	87.0° F.	87.° F.	13.° F.	74.0° F.
1875	95. "	—5. "	100.0 "	90. "	2. "	88.0 "
1876	100. "	4. "	96.0 "	89. "	8. "	81.0 "
1877	95. "	8. "	87.0 "	88. "	12. "	76.0 "
4 Yrs.	100. "	—5. "	105.0 "	90. "	2. "	88.0 "

What wonder, then, that thousands of people seek the sea-side to escape the heat and the ills of the hot season at home; that the silent stretches of sand become, under July skies, thronged cities and the gay sojourning-places of vast caravans of pilgrims, who come down to worship at — not the tomb — but the shrine of the ever-living Hygeia, goddess of Health! Air, skies, and sea are laden with blessings for those who know how they are to be obtained.

But here, as elsewhere, the gifts of health are to be sought in moderation and prudence. How often, with the best intentions, is the pursuit of health defeated by some imprudence unwittingly committed,— prolonged exposure to the sun, too frequent or too long bathing in the surf, hours that should be given

to sleep thoughtlessly spent in the heated and crowded ball-room! How much oftener is the season made a prolongation of the dissipation and revelry of winter, and looked upon not so much as an escape from unfavorable surroundings, as an opportunity for social gaieties that would be impracticable without the cool sea-breeze and the invigorating sea-air and surf-bath!

For those who love the borders of ocean, our Atlantic coast offers a long list of places, varying in their attractions, none without some special charm of its own. Far away to the north lies Mount Desert, in the loveliness of its scenery no mean rival of Monaco and Sorrento. Above the beetling cliffs of the southern shore of the island, whose faces are worn into weird, arched, sea-anemone bearing caves, rise the steep, wooded slopes of a bold cluster of mountains, to the far-off bouldered peaks which form their barren summits. Here and there the eye rests upon a patch of green pasture-land, wrested with much toil from the wilderness around it; on one hand stretches away the illimitable sea, on the other lie the placid waters of Frenchman's Bay, studded with many islands; between them, ever on guard, stands the light-house, built upon an up-jutting mass of rock. Fair roads wind around the mountain bases, and clamber deviously to their summits, whence such views may be had as are not excelled in any

land. In the deep, chasm-like valleys, hundreds of feet above the level of the sea, which spreads out below you, and is, in truth, but a mile or two away, lie blue, gleaming lakes, whose cragged and fir-clad shores recall Swiss landscapes. There is no surf, and at this point on the coast the Arctic current creeps down, making the water too cool for any but the most robust bathers, who, indeed, rarely prolong the dip beyond a few minutes, and find great comfort in brisk towelling afterwards. There is no lack of amusements, however, which, in years gone by, were of a simple, healthful kind,— moderate mountain-climbing, excursions afoot or in wagon, riding, picnics, and boating upon the bay, the waters of which, in August nights, show a phosphorescence like that of the tropics. Alas! Mount Desert grows civilized as it grows older and the life there more complex. They dance the "cotillon" nowadays, and "evening-dress" is often *de riguer*.

Westward, on the coast of Maine, is Castine, a quiet place of great natural beauty, and a climate not very different from that of Mount Desert, to which the dense August fogs are certainly an objection.

Further around to the south you come to Old Orchard, with its long glistening beach, and clear, cool water, usually innocent of breakers; and further on, Rye, delightful for the fair country back of it; its noble groves, and the little rocky, half-moon beach,

where you can enjoy surf-bathing of the most gentle kind. From Rye you look across ten miles or more of sea to the low-lying Isle of Shoals, attractive for being out at sea, almost beyond the land-breeze and its mosquitoes. Here, those fond of sea-fishing can find abundance of amusement; and the life is tranquil, healthful, and without undue excitement. The number of sea-side places of resort increases as we approach the neighborhood of the great cities. It is but necessary to speak of Narragansett Pier, of stately Newport, with its mild English climate, and luxurious, ostentatious, but refined social life, of the multitudinous localities upon the Sound, and near New York, that find favor in the eyes of their annually returning frequenters. But let me not forget Nantucket, for, as a whaling-port, with ninety ships, and that but little more than a quarter of a century ago, she has seen better days. There is something weird about this island city, twenty miles from the main, once so prosperous, now fallen so low among her rivals, without a ship, her harbor closed up by a rapidly formed bar, her people for the most part departed. But it is no bad place to pass a brief summer holiday. There is room to walk, abundance of room for the most ambitious sailor, and good boats, with sea-fishing, and fine still- and surf-bathing. Moreover, no land-breeze can reach her shores, a consideration, in certain seasons, of no mean importance. From Sandy Hook

to its most southern point, the shore of New Jersey offers excellent accommodations for the summer sojourner. Its hotels are more numerous than the coast-guard stations, and they grow up in new spots from year to year. In the course of time, miles of continuous park, with hotels, cottages, and every accommodation for summer and winter visitors, will skirt the coast at various points. More easy of access than some more famed shores, untrammelled by natural or artificial boundaries to its available space, blessed with a delightful climate as compared with inland regions but little remote, this sandy coast, useless for other purposes, is destined to be the summer park for millions of people. Already from point to point it is thronged from June till September with thousands of happy men, women, and children, who find change, rest, cool salt air, bathing, and such society as suits them, within a few hours of their homes. This coast is too well known to those into whose hands this volume is likely to fall, to make any description of the separate places of resort upon it necessary. They differ in many respects, but the most notable natural changes are those in the beach, and in the back country—from Long Branch, with its superb bluff, its lovely rolling farm-land, and fine bathing, to Cape May, which has no back country to speak of, but makes up for it by the finest beach in the world, and surf-bathing unsurpassed for excellence and safety. I

cannot leave this subject without a passing allusion to some of the spots in which it has been my lot to pass pleasant summer days — Elberon, with its smooth turf and pleasant cottage-life; Spring Lake, famous for its pretty body of clear spring-water, only a few hundred feet from the surf, its forests, and its corn-fields reaching to the beach, and its excellent drives back into Monmouth, the most fertile country in New Jersey. A little to the southward is Sea Girt, its porches so close to the water that you seem to be upon a yacht, and wonder why there is so little motion. Then come Squan, Point Pleasant, Tuckerton, Long Beach, Beach Haven, and Brigantine. From Brigantine, across shoals that have been the grave of many a noble ship and many a brave sailor, to Atlantic City, dear to the hearts of my townsmen whom she has blessed so long; doubly dear to many an invalid who has left the wearisome four walls rendered too hatefully familiar by the long days of sickness, and a bleak winter climate at home, to find a new place, and warmth and sunshine, and a quick return to health in some one of her many comfortable cottages. Sixty miles of as yet unoccupied beach bring us to Cape May, most southern and most excellent of bathing-places.

It must not be thought that the chief advantage of a summer stay at the sea-shore is to be derived from the bathing. I am so far from holding that opinion,

that I believe those who derive most benefit from it are those who do not bathe in the surf at all. Many people cannot stand surf-bathing; many enjoy it, but are so depressed by it that they are warned against the indulgence; a larger number still enjoy it greatly, and feel so little unfavorable after-effect, that they continue it day after day, until the health suffers in one way or another in consequence. The majority of bathers who are cautious as to the length of time they spend in the bath, and the way they pass the hours after it, are doubtless benefited by it. But how few are so! My lady, who rarely rises till nine or ten, and never in her life has walked five miles at a stretch, who spends much of her time on soft cushions at ease without muscular effort, must not forget that fifteen minutes fighting the surf uses up a great deal of force, and that a longer time spent in the bath is a great risk which she would by no means run, a great exertion which she could by no means endure, were she not kept up by the excitement of the whirling water, the gay throng and the consciousness that she looks marvellously well in her pretty bath-costume. The best plan is to make the pleasure a short one, to excite a speedy reaction by brisk towelling, and to stretch out in delightful quietude till it is time to dress for dinner. It is impossible for me to leave this topic without entering a most earnest protest against the common error of taking young children who are

frightened into the surf. The little faces that I have seen convulsed with a terror which was agonizing, at being forced or dragged into the water, haunt me still. The unknown is always terrible, and the tumbling, roaring waters so familiar and so delightful to many a thoughtless man, are monstrous to his timid child. Set the youngster down upon the sand and watch him. He will quickly make experiences for himself, and that not only without suffering, but even with manifold expressions of infantile delight.

The sea has its drawbacks, too, and not among the least of them is this, that many persons cannot prolong their stay at the shore without suffering from fulness of the head, a sense of dulness and vague mental as well as physical discomfort, with coated tongue, loss of appetite, constipation, in a word, that indescribable collection of bodily discomforts to which is given the name of biliousness. There are often persons of sedentary habits, indisposed to exercise, who find in the sea air an appetizing tonic, and in a varied table daily temptation, and who in consequence unconsciously commit excesses in diet. It is possible, also, that there is something in the maritime climate itself unfavorable to certain individuals. The brisk air and plainer tables of high altitudes usually work a speedy and enduring cure. A change to the mountains is the best course for those who, after some weeks, find themselves suffering in this fashion.

Among the mountains one lives nearer to Nature. The hotel, with its long porches and waving flags, its tiresome bustle, its futile emulation of urbane magnificence, is not so difficult to escape as its rival on the long, level stretches of low coast lands; a turn in the road cuts it off from your view, and you may be alone among the rocks and hemlocks.

"Jocund day
Stands tip-toe on the misty mountain-top."

There is nothing dull or heavy in this high atmosphere laden with balsamic principles. You breathe it with the keen relish with which you enjoy the faint ethereal bouquet of rare wine — for it is likewise rich with subtile transmutations of the sunshine. It makes the blood dance in your arteries, and your muscles tense with a vigor the consciousness of which is a delight. Whether you ride or walk, it is with ease, and fatigue itself is grateful, for it courts refreshing sleep. As you stretch yourself at length upon some overhanging ledge cushioned with deep layers of the soft, dry sheddings of the murmuring trees which shade you, what forgetfulness of the daily worries of life comes up to you from the long, soft, serene landscape far below, from the unchanging peaks, scarred but not moved by the storms of cycles, and drops down upon you from the cloudless, tranquil sky.

Goethe has said,—

"On every height there lies repose."

Here you have that best of all repose,—repose with the sense of unusual power, unusual capacity for successful effort.

I have often thought that the mountains are more attractive to those who are no longer young, because of the *fixedness* of their scenery, which tells of struggles that are past, of tumult and throes that have ended in a sublime repose; and which, in the grandeur of its sweeping lines and their vertical tendency, and its heavenward-pointing peaks, suggests aspirations that are not of earth. While the sea, restless, changing, ever the scene of a present tumult and commotion, appeals, as it stretches away from his feet to far countries, to the restless, yearning, ambitious heart of youth, to whom the world is a rich and fabled *terra incognita*, which he is impatient to discover and explore.

"I remember the black wharves and the slips,
And the sea-tides tossing free;
And Spanish sailors with bearded lips,
And the beauty and mystery of the ships,
And the magic of the sea.
And the voice of that wayward song
Is singing and saying still:
'A boy's will is the wind's will,
And the thoughts of youth are long, long thoughts.'"

To the valetudinarian, stiffened with chronic rheumatism or racked with the pangs of gout, the various

mineral springs offer the threefold attraction of a cooler climate for the hot seasons, a new place in which he can meet society, agreeable by reason of sympathy and many common experiences, and the opportunity of spending the summer in a "course" of the baths and waters.

And the time is by no means always misspent. I have repeatedly known such persons to derive very great, even permanent, benefit from a summer at Sharon or Richfield, the White Sulphur, or a roving season among the famous thermal springs of Virginia; and certain maladies of a chronic nature become less troublesome after some weeks at Berkley, or lovely Capon, with its Beauty Spring, even if they be too obdurate to yield entirely. How many men and women past middle life would shudder at the prospect of a summer spent without some weeks at Saratoga.

To drink the waters and to see the world. This is life at the Springs. A pleasant life of leisure it is, too, with often a most charming society, made up of such an admixture of experienced, worldly men and women who have come to drink the waters, and their younger people whom they have brought along, who do not feel the need of alterative draughts, but are ripe for a good time, that the shaded grounds and neighboring hills are changed into a merry picnic place, and the weeks pass quickly away in a life that

has a charm for its devotees so great that they know no rival to the "Springs."

Another class of persons buy a long excursion ticket, and spend their holiday in travel. So much beautiful scenery, so many spots of interest, are to be seen in this way, that it has great attractions. But in our climate it is a poor way to spend the summer. The greatest care in dividing up long journeys or in arranging the stoppages will not prevent this mode of spending the season from being a veritable hardship to most persons in the long, hot, dusty days of July and August. In the spring, if you like, in the autumn, if you can, make up a party and see some of the fair places in your own land; but in summer, if you are in search of health, spend as little of your time as you can in railroad-cars.

If all this has grown to be an old story, and you are comfortable at sea and can afford it, pack up a small quantity of luggage and take an out and back berth on an ocean steamer to Liverpool. Six or eight weeks will be enough to enable you to catch a glimpse of Mont Blanc, or, if you prefer not to cross the Channel, a trip to Scotland or the coast of Wales will repay you for all it costs in time or trouble. On the score of health this is an excellent holiday journey, particularly for men whose lives are devoted to hard, unsparing, responsible head-work.

The best holiday for the hard-worked citizen is that

spent in the wilderness. Maine, Canada, the shores of Lake Superior, or the more accessible Adirondacks are wild enough and lonely enough, and abound in excellent camping grounds on which to pitch your tent. Dr. Mitchell has sketched the picture of camp-life in the woods so cleverly, that I venture to transcribe a page of his little book.* "One wants more than eight by ten to sleep in, and society of a kind one does not crave, and the delights of unlimited boarding-house gossip. Civilization has hurt, barbarism shall heal. In a word, my tired man who cannot sleep, or who dreams stocks and dividends, and awakens leg-heavy, aud who has fifty other nameless symptoms, shall try awhile the hospital of the stone-carver. He shall reverse the conditions of his life. Wont to live in a house, he shall sleep in a tent, or, despite his guide's advice, shall lie beneath 'the moon's white benediction.' So shall he be in the open air all day and all night, for the tent is but a mere cover and wind-guard, or scarce that. He shall rise when he likes, unstirred by imperious gongs, but I think he will be apt to see the sun rise, and, honestly tired from travel or food-getting, will want to turn in at eight or nine. If too warm, he will take his coat off; if cold, to replace the demon furnace in the cellar with its breath of baked air, he shall find warmth in the 'ruby wealth of roaring logs' he has

* Camp Cure, by S. W. Mitchell, M. D. 1877.

helped to chop and carry. The best part of his meals he shall earn by sweet labor with his rod or his gun. His shall be the daily plunge in lake or river, and the intense, eager hungriness which has no quarrel with the *ménu* of wood or stream. The sleep that is dreamless, the keen senses, the Arab vigor that makes exercise a jest and the mindless work of the camp a simple pleasure — all these are the reward which comes to a man who is living the out-door life of the camp by the silent lake or merry river, or far in the noiseless deeps of northern forests, rich with the scent of pine, and the fragrant wood-odors of the mouldering logs of the windfall."

Much benefit is to be derived from the change of climate and surroundings, in addition to the escape from the heated air of cities and the routine of our daily life. In choosing a summering place, it is therefore desirable that one should be selected which contrasts the most strongly with the home scenes and home life. A good part of the gain lies in change, and it is this that makes a stay in the mountains or by the sea, or a voyage, or camp-life, at once so delightful and so profitable to the jaded citizen, who needs more in summer than a cooler atmosphere to breathe.

There are those all around us to whom these pleasures are but idle tales; they have no part in them. Whether it be hot or cold, they must bide at home and toil for the bare means to keep the ever-snarling wolf from the door. For them the summer, with all

the miseries of its hottest days and nights, is easier than the winter, for coals cost money that is hard to earn. How shall they be taught that temperance and cleanliness make the body better able to withstand disease; that an evening spent in the park, upon the river's bank, or on the water, gives change and restfulness and health to mind and body alike?

Too much praise cannot be given to the large-hearted men and women who, in the past few years, have organized and carried out, in spite of many difficulties, plans for children's excursions upon the rivers and to the parks, where, for a day, at least, the forlorn little ones of the people may look upon the sky and the green fields, and breathe the pure air of heaven. To the same generous thoughtfulness is due the existence by the sea-side of the "Homes" for convalescent children, for mothers who are destitute to go to with their young babes, and for working-girls, that are now to be found in the best localities. Here, for a trifling outlay, or oftener without money, a holiday and a health-giving change of two or three weeks' duration is brought within the reach of those who require it as much as any in the land. These institutions, as a rule, supply good, wholesome food, extra diet for the sick, nursing, medical advice, and medicines without charge; in fact, they provide for all the necessary wants of their temporary inmates.

In going away for the season, the medicine-chest

is not to be forgotten. Let us hope that it will prove to be a useless precaution. It may, however, be a friend in need. It should be small. There is but little room for it in the trunk, and but few drugs that are likely to be required. In the first place, it should contain a roll or two of bandages, some lint, adhesive and court plaster, and a yard of oiled silk, in case of accidents; then some of the best preparations of opium, paregoric, the deodorized tincture of opium, and Collis-Brown chlorodyne. If there are children, magnesia, aromatic syrup of rhubarb, and castor-oil are useful. Camphor water, aromatic spirits of ammonia, an ounce of chloroform, essence of ginger, some simple rhubarb pills, some compound cathartic pills, a box of Seidlitz powders, quinine, and a package of carbonate of soda for burns and bites, complete the list of things likely to be useful or to be used in the absence of a doctor, who must be sent for as soon as the domestic skill is baffled or at fault. Each bottle must have a printed label, with the dose for an infant, a child, and the adult distinctly stated. Narcotic drugs should have an extra, conspicuous label, "Use with care," or "Poison," and the stronger preparations, such as laudanum, should not be given to children without the advice of a medical man.

No one should go away from home without a flask of sound spirits, brandy, or, because you can obtain that of good quality more easily, whiskey. It may save great suffering in emergencies.

CHAPTER II.

SUNSTROKE AND HEAT FEVER.

THE most obvious and direct effect of the intense heat of summer in producing disease is seen in sunstroke. In truth, though several agents have been regarded by various writers as predisposing causes of this formidable malady, and though there can be no doubt that the habitual abuse of alcoholic drinks and great fatigue increase the liability to it, prolonged high temperature, whether solar or artificial, is always the exciting cause, and, in most instances, the sole cause. For this reason sunstroke is a disease unknown in this climate except during the summer months; the cases become numerous as the temperature rises to its highest point, and much suffering and many deaths take place from this cause in those trying days when the sheltered thermometer indicates for many hours continuously a heat greater than ninety-five degrees of the scale of Fahrenheit. Sunstroke is frequent in tropical climates, and whilst it attacks European residents in greater numbers, native races are by no means exempt.

It has been known from the earliest historical times. Several instances are related in the Bible. The reader will recall the graphic story of the child of the woman of Shunem: "And when the child was grown, it fell on a day that he went out to his father to the reapers. And he said unto his father, My head, my head. And he said to a lad, Carry him to his mother. And when he had taken him and brought him to his mother, he sat on her knees till noon, and then died."

Jonah, the son of Amittai, seated under the booth which he had made, found the sun very hot, as he watched to see what would become of mighty Nineveh, so that he was exceeding glad of the gourd which grew up to be a shadow over his head, to deliver him from his grief. But the gourd withered. "And it came to pass, when the sun did arise, that God prepared a vehement east wind. And the sun beat upon the head of Jonah that he fainted, and wished in himself to die."

To the people of a "dry and thirsty land," the promise that "the sun shall not light upon them, nor any heat," is rich in meaning, and the metaphor of "the shadow of a great rock" has a significance that we can scarcely comprehend.

Until very recent times, sunstroke has been confounded, even by physicians, with a number of other diseases, among which may be mentioned continued

and remittent fevers, to which, as we shall see later, many cases certainly bear a resemblance, and apoplexy of the brain, with which the more rapidly fatal cases have many symptoms in common.

Sunstroke is a very fatal affection.

In May, 1834, the 68th Regiment, quartered in Fort St. George, Madras, attended the funeral of a general officer. The regiment paraded in full dress, at an early hour in the afternoon, in one of the hottest months of the year, their tight-fitting, red cloth coats buttoned, wearing their stiff, unyielding leather stocks, their heavy cross-belts, and their black felt shakoes, with flat, circular tops and brass ornaments; in fact, the complete uniform of the British soldier of that date. The route of march extended over several miles. Before the funeral parade was over the men began to fall to the ground insensible — one died on the spot, two others in a short time. Men suffering from sunstroke were carried to the hospital all that night and part of the next day. There lingers a tradition of that parade in Madras to this day.

Dr. Maclean was an eye-witness of the following outbreak. On the 21st of July, 1842, the 98th Regiment took part in the attack on Chin-Kiang-Foo. This regiment had just arrived from England in an overcrowded ship. The men were dressed as has been described in the instance of the 68th. Thus

laden down, the poor fellows were ordered to take possession of a steep hill, exposed to the fierce rays of an unclouded sun. A great many were struck down by the heat; about fifteen died on the spot, falling on their faces; they gave a few gasps and perished before anything could be done for their relief.

The following account is by Dr. Barclay. The 43d Light Infantry marched, in 1857–58, at the time of the India mutiny, from Bangalore to Calpee, in Central India, a distance of more than eleven hundred miles by the route taken. The march was almost continuous, and the greatest part of it accomplished during the hottest season of the year. The men were exposed to a very high temperature by night as well as by day. Dr. Barclay observed the thermometer on one occasion at 118° F. in the largest tents, and 127° in the smallest, during the day, and once at 105° at midnight. No case of sunstroke occurred until the regiment had marched nine hundred and sixty-nine miles, and the signs of exhaustion were very evident in the emaciation and altered looks of the men. From that time they increased in frequency. When at the foot of the Bisramgunge Ghât, a narrow pass with precipitous walls of great height, cases were brought to the hospital tent at every hour of the day and night, and though a large proportion recovered, two officers and eleven men

were buried under one tree in the neighborhood of the camp. Several natives were struck down and perished within an hour.

That the direct rays of the sun are not necessary to the causation of sunstroke, is shown by the following facts. Soldiers are not infrequently seized after they have retired to their tents, and one writer states that out of sixteen cases, thirteen occurred in barracks or in hospital. On board the French man-of-war *Duquesne*, while lying at Rio Janeiro, one hundred cases of sunstroke occurred in a crew of six hundred men. Most of the men were attacked, not when exposed to the direct heat of the sun, but at night, when in the recumbent position; that is, when breathing a hot and also an impure air. It is thus seen that the attack not only may occur at night, but that the affection is also encountered on shipboard.

I have known of instances upon the smaller boats of rivers. A young gentleman, clerk in an office, was directed to take a tug-boat and overhaul a vessel that had proceeded down the Delaware River, in order to serve some papers of legal importance upon her master. The day was intensely hot, and the small steamer afforded poor protection from the sun. At the close of the day he returned to his home complaining of headache, and lay down. During the night he became unconscious, with all the symptoms of sunstroke. He recovered, but for sev-

eral years suffered from distressing headache upon exposure to heat.

Cases often occur in laundries, sugar-refineries, railroad depots and workshops. Dr. Swift states that eleven persons were attacked on the same morning in the laundry of a large hotel in New York.

Dr. Flint relates that eight cases of insensibility from sunstroke were admitted to the Bellevue Hospital on the 9th of August, 1862, and that of these seven died. According to this author, 40 to 50 per cent. of those attacked die, mild and grave cases taken together.

Dr. H. C. Wood, to whom it will be necessary to again refer, gives* the notes of eight cases seen in the Pennsylvania Hospital, with but a single recovery. In this climate the seizure generally occurs during the hottest part of the day. One author states that of sixty cases observed, forty occurred between 11 A. M. and 4 P. M., seventeen between 4 and 9 P. M., and three between 8 and 11 A. M.

Intemperance is universally acknowledged to be a predisposing cause; so, also, are debilitating influences of every kind, particularly those of such a character as lower the tone of the nervous system and increase its irritability. Among the latter group of influences may be mentioned previous prolonged exposure to a

* Sunstroke. Boylston Prize Essay, by H. C. Wood, M. D. 1872.

high temperature, not in itself sufficiently intense to cause the disease, but having an unfavorable influence upon the nervous system, and in this way impairing its powers of resistance; excessive fatigue, bad ventilation, at night especially; the febrile state, and the debility following other diseases.

Owing to the different nature of the avocations of the sexes, the affection is very much more common among men than among women; and in consequence, in part, of their more delicate organization, and in part of their ignorance of danger, numerous cases occur among children.

Numerous writers concur in the opinion that the plethoric, or "full habited," are more liable to sunstroke than others.

Whilst the foregoing conditions are predisposing causes, that is to say, whilst they increase the liability to the disease, the sole exciting cause, that is, the cause which actually produces it, is heat, intense and prolonged. Hence, no class of persons exposed to its influence are exempt from danger, though the avoidance of the unfavorable conditions enumerated as predisposing causes diminish the danger *pro tanto*.

It is in recognition of its cause, that the malady has been designated by such names as, heat apoplexy, heat asphyxia, sun fever, coup de soleil, insolatio, ictus solis, sunstroke.

The exact point on the scale at which the danger

begins cannot be pointed out with certainty. It must vary with the powers of resistance of the individual, his condition at the time as regards acclimatization, temperance, health and so forth, and with the condition of the atmosphere with reference to dryness and moisture, electrical tension and the like. The views of observers are conflicting upon this point; but it is probable that a moist atmosphere, as interfering with free evaporation from the surface of the body, increases the danger. And that electrical state of the atmosphere which precedes thunder-storms is generally thought to be favorable to the occurrence of sunstroke. Various classifications have been made by different authors with a view to simplify their descriptions of the disease and render their accounts of it more exact. It appears to me that most, if not all, of the cases may be referred to one or the other of two groups.

I. Cases of a severe form, coming on suddenly, with but little warning, after exposure to the sun's rays, or in an atmosphere of intense heat, either under cover or out of doors. The attack is preceded by giddiness, nausea, a confused blending of colors, and sharp pain in the head. The symptoms last a short time. In some instances the patient may scarcely have time to speak of them before he falls to the ground unconscious, with noisy breathing, restlessness and convulsions, or he may lie absolutely motionless. The

pulse may be so rapid that it cannot be counted; the surface of the body is intensely hot, the temperature reaching from 104° F. to 110° F. Death may occur in a few minutes, or the symptoms may last from six to forty-eight hours.

In some cases instant death occurs, like that from lightning-stroke, the patient falling forwards, gasping and dying before anything can be done to aid him. These cases occur during active exertion. When the attack occurs at night in bed, the first indication to those around is often the noisy breathing of the unconscious patient.

To this form of the disease the name of sunstroke is especially applicable.

II. The attack is generally sudden, often without much chilliness. The face becomes flushed; there is giddiness and much headache, intolerance of light and sound. The heat of skin is great; pulse frequent, full and firm. There is pain in the limbs and loins. The respiration is anxious. There is a sense of oppression at the pit of the stomach, with nausea and frequent vomiting of bilious matters. The bowels are sometimes confined; at others vitiated discharges take place. The tongue is white, often with florid edges. The urine is scanty and high-colored. If the excitement continues unabated, the headache increases, and is often accompanied with delirium. If symptoms such as these persist for from forty-eight

to sixty hours, then the fever may subside, the skin may become cold, and there will be risk of death from exhaustion and sudden collapse. (Morehead.)

Or there is simple loss of nerve-force caused by over-exertion during exposure to high heat. Such cases may happen in the open air under the vertical rays of the sun, or in the close and heated atmosphere of furnace-rooms, laundries, or of crowded barracks in India. The symptoms of such cases are a feeble and moderately frequent pulse, a moist skin, head generally hotter than the trunk, little or no change in the pupil, a tendency to fainting on the slightest exertion. (Levick.) These cases usually terminate in recovery; or the symptoms may after some hours become intensified, and the signs of fully developed sunstroke, with profound disturbance of the nervous system, unconsciousness, convulsions, palsies, may show themselves.

Thermic fever, or heat fever, is the name given to this form.

The difference between the two forms is one of degree, not of kind.

The affection may then be looked upon as a fever caused by heat, and running a rapid course. In some instances, as has been seen, the nervous system is speedily overwhelmed by the intensity of the fever, and death occurs at once or in a few hours; in others the fever is of a milder type, resembling the hot

stage of remittent fever, or transient irritative fevers produced by other causes, and running a similar course. But it is not to be forgotten that in this form also there may be a sudden, rapid augmentation of the fever, followed by the speedy death of the patient.

Heat of skin is never absent; it is attended with dryness, and is, in most instances, intensely pungent and stinging to the touch. When not dry, the skin is bathed in a profuse perspiration. The temperature, as has been pointed out, may range from 104° to 110° during life or at the moment of death.

Giddiness and various disturbances of vision, with congestion of the eyes, are present in most cases.

The debility is extreme; there is inaptitude and disinclination for mental or physical exertion.

Nausea and the vomiting of bilious matters also occur. The bowels are sometimes constipated, sometimes there are repeated watery discharges.

The cutaneous perspiration is almost invariably suppressed at the outbreak of an attack.

The urine is at the onset sometimes copious and limpid, and the desire to void it frequent; later it is suppressed.

The action of the heart is rapid and sharp, the pulse frequent, sometimes uncountable, tense, or feeble, sometimes irregular.

A shout of mad laughter, or the frantic attempt to

escape in terror from some imaginary enemy, may mark the onset of the seizure. A soldier seized the piece from the hands of a sentry to defend himself from such a foe. Sailors have with difficulty been restrained from throwing themselves into the sea.

Insensibility supervenes; the heat of the skin augments; the pupils may be dilated, normal, or contracted, and are insensible to light; the patient lies motionless upon his back, or his body is distorted with rapidly recurring convulsions.

The breathing grows more rapid and noisy; mucus collects in large quantities in the mouth and throat; the pulse grows feeble and flickering, and death closes the scene.

An examination of the body after death reveals the changes found at the termination of fatal cases of the continued or essential fevers, so that one author has supposed that, in consequence of the action of heat, a poison analogous to that of typhus fever was generated in the blood. This fluid is dark, thin, uncoagulated, feebly alkaline, or even acid; the right side of the heart, and the branches of the pulmonary artery, are distended, engorged with this dark fluid blood; so, also, are the vessels of the membranes of the brain, though the brain tissue itself is not as a rule notably congested. The heart substance is remarkably firm, rigid. That setting of the muscles which is known by the name of *rigor mortis*, takes

place with great rapidity. There is no other characteristic and constant change encountered.

In the rigidity of the heart, the morbid anatomy of sunstroke differs from that of the other fevers, in which that organ is always softened and flabby.

Prof. Wood, who produced sunstroke artificially in animals, and was thus enabled to study its phenomena, both during life and after death, with great accuracy, and under varying conditions, comes to the conclusion that this rigidity of the heart, and the remarkably rapid stiffening of the body after death, are due to the same cause, namely, coagulation of the albuminoid fluid of the muscles, which is called *Myosin.* He found that this muscle-juice coagulates almost instantaneously at a temperature of 115° F., and at a considerably lower temperature, if the muscles have been in great activity before death.*

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* The results of experimental physiology receive some curious confirmations from other sources. It is well known to hunters that the carcasses of animals slain after a long chase become rigid with great rapidity. And some remarkable instances of the instantaneous occurrence of *rigor mortis* on the battle-field, *i. e.*, when death has occurred during prolonged intense muscular activity, are related by military surgeons.

Dr. Brinton (*American Journal of the Medical Sciences*, Jan., 1870) has collected a number of examples, among them the following:

While a detail of United States soldiers were foraging in the vicinity of Goldsboro', N. C., they came upon a party of Southern cavalry dismounted. The latter immediately sprang to their saddles; a volley at about two hundred yards' range was fired at them, apparently without effect, as they all rode away, with

He further established the facts that heating the brain of a mammal to 108° F. produced sudden insensibility, with or without convulsions, and death when 113° F. is reached; that this effect of the local application of heat is not due to congestion, but is the result of the direct action of the heat upon the brain, and that the centres of the nervous system are as unfavorably affected by high heat as the muscles are; that the life of the blood is not destroyed by any temperature reached in sunstroke; that there is no

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the exception of one trooper. He was left standing with one foot in the stirrup; one hand, the left, grasping the bridle-rein and mane of his horse; the right hand clinching the barrel of his carbine near the muzzle; the butt of the carbine resting on the ground. The man's head was turned over his right shoulder, apparently watching the approach of the attacking party. Some of the latter were about to fire a second time, but were restrained by the officer in charge, who directed them to advance and take the Southern soldier alive. In the meantime he was called upon to surrender, without response. Upon a near approach and examination he was found to be rigid in death, in the singular attitude above described. Great difficulty was experienced in releasing the mane of the horse from his left hand, and the carbine from his right. When the body was laid upon the ground, the limbs still retained the same position and the same inflexibility. This man was shot through the body and the head, and had, of course, died instantly. The horse had remained quiet, being fastened by a halter.

It is related that a party of German officers were dining in a trench before Paris, and that by the explosion of a shell near at hand one of their number was instantly killed, a portion of his skull being torn off. His body remained in the sitting position, and his arm extended, rigid, still holding the cup, in which was some wine remaining, upraised.

specific poison, like that of typhus, for example, developed in the blood by the action of heat, but that the deterioration of this fluid is due to rapid tissue changes induced by the fever-process, and the more or less complete arrest of secretion; that these changes in the blood are secondary to changes in the nervous system, not primary; and that if the heat be withdrawn before it has produced permanent injury to the nervous system, the blood or other tissues, the unconsciousness, and other symptoms immediately disappear, and recovery takes place. The conditions with which sunstroke is most likely to be confounded are apoplexy of the brain, and insensibility produced by alcohol or other narcotics.

A person walking in the street is seen to totter; he sits down, and soon sinks to the earth, or he may fall at once; or a workman lets his tools drop from his hands, and in a moment falls to the ground. On examination, he is found to be in a state of unconsciousness. He lies quiet, or there may be restlessness, and rarely talkative delirium; still more rarely he may be aroused for an instant by shaking or shouting in his ear. Of the other symptoms, most of which have been enumerated above, many would escape the attention of an untrained observer; others might not at once appear. One is, however, constant, and most readily recognized. It is the intense heat of skin. It almost scorches the hand. This is of the utmost value as pointing to coup de soliel. Or the patient may have

been found insensible, and his life may depend upon the prompt action of the bystanders. The discrimination of these conditions is then of the greatest practical value. A comparison of the principal symptoms, as arranged in columns, will be of service as fixing them in the memory.

Apoplexy.	Sunstroke.	Alcoholic Intoxication.
Attack sudden.	Attack sudden, but usually preceded by dizziness, disturbed vision, headache.	Insensibility comes on gradually after the stage of excitement.
Insensibility usually complete for a varying length of time.	Deep insensibility of shorter duration. Patient may often be roused by shouting or shaking.	Insensibility rarely complete.
Breathing snoring. It is slow, irregular, and explosive in expiration.	Also snoring breathing. Apt to be rapid and labored; noisy from presence of mucus in the upper air-passages; not explosive.	Respiration slow and snoring.
No convulsions.	Convulsions often recur. Twitchings of muscles.	No convulsions.
Paralysis of one side or the other.	No paralysis.	No paralysis.
Flushing of face.	Face often deeply flushed; or, together with the whole surface, it may be of a dusky hue.	Face dusky and bloated.
Pupils often uneven.	Pupils alike; immovable; they may be contracted, dilated, or about normal.	Pupils alike.

Apoplexy.	Sunstroke.	Alcoholic Intoxication.
Pulse slow and full.	Pulse very rapid and sharp; often wanting in volume.	Pulse slow.
Skin cool and moist.	Skin intensely hot. Usually burning and pungent to the touch, and exceedingly dry. More rarely it is bathed in a profuse perspiration.	Skin cool and leaky.

Heat fever in its milder forms can only be distinguished from other transient febrile states by a careful inquiry into the cause; in graver cases the intensity of the fever-process, and the history of exposure to a high temperature, serve to indicate the true nature of the malady. The absence of the initial chill of remittent and other malarial fevers, ought to enable the observer to distinguish it readily from the hot stage of these periodical diseases.

For months after the attack, the patient is liable to suffer from irritability and exhaustion of his nervous system. Headache of a persistent character, always aggravated by exposure to the hot sun, and by prolonged mental effort, is apt to trouble him. This is usually due to an irritable condition of the coverings of the brain, and, after a time, passes off; it is, however, sometimes symptomatic of chronic inflammation of the brain-coverings. Epileptic fits have followed recovery from sunstroke in some instances, particu-

larly in those who have been subject to them in childhood, or who have inherited a tendency to them. Saint Vitus's dance is an occasional result. Insanity sometimes follows. Maclean relates that an officer of distinction lost his cap while pursuing a wild hog, and, in the excitement of the chase, rode for miles bareheaded. Sunstroke resulted; his mind was affected, and complete recovery never took place.

Those who have suffered from sunstroke are, for a long time, unfitted to live in tropical climates.

The Treatment of Sunstroke.— If the theory of the disease sketched in the foregoing pages be correct, the indications for treatment are sufficiently evident.

1. The disease is of the nature of a fever of great intensity, induced by the action of heat upon the nervous system.

2. The insensibility, convulsions, rapid action of the heart, hurried, labored respiration, all indicate depression, not exaltation, of vital processes.

3. The dry skin, the suppression of urine, constipation, or vitiated discharges if diarrhœa be present, point to the action of heat upon that portion of the nervous system which controls secretion, and tend speedily to affect the quality of the blood by favoring the retention of the products of tissue-waste, which goes on with great rapidity in consequence of the intensity of the fever-processes.

The object of treatment, then, is threefold:

The abstraction of heat.

Stimulation.

The restoration of the functions of the excretory glands.

The patient should immediately be removed to the nearest shade. Valuable time — indeed, life itself — may be lost, in transporting him a long distance to his home or to a hospital. Besides, in addition to the delay in instituting treatment, it almost always involves further exposure to the sun's rays.

Medical aid must be at once summoned; meanwhile, much may be done by those at hand.

His clothing being removed, he is to be placed upon his back, with the head and shoulders slightly raised, and cold water poured freely upon his head, neck, and chest. The sole object of this procedure is to reduce temperature; it is not, therefore, necessary to use the douche with force. Indeed, in some cases, it is not admissible at all, because it excites convulsions or causes pain.

Ice may be rubbed over the surface of the body, and pieces of ice wrapped in towels are to be held in the armpits.

Cold-water injections are to be administered. If the circumstances admit of it, the patient may be placed in a cold bath (50° F.).

As the temperature of the body falls, the pulse becomes slower, the breathing more natural, consciousness returns.

These are powerful measures, and capable of doing harm if persevered in for too long a time.

Signs of improvement are a measure of their successful action in abstracting heat. An accurate guide is the actual temperature as taken by the thermometer in the bowel or in the armpit every ten or fifteen minutes.

After the temperature has fallen, and even a decided amelioration of the symptoms has taken place, there is not infrequently a relapse; the temperature rises again, and insensibility may again come on. This may be avoided by occasional cold sponging, fanning, and the like. It must be treated by recourse to the same energetic measures to abstract heat.

Stimulating injections are to be administered; they have the additional advantage of occasioning a movement of the bowels. Diarrhœa, however, should not prevent their employment. An ounce of turpentine beaten up with an egg, and then stirred into a sufficient quantity of soapsuds, will be found useful and convenient. Ammonia may be held to the nostrils. Mustard-plasters are to be applied to the ankles and wrists, and, if the circulation flag, over the region of the heart and along the spine. As soon as the patient can swallow, he may be allowed iced brandy-and-water in moderation. If he vomit, so much the better — the act relieves the chest of accumulated mucus.

If the bowels be stubbornly confined, an injection of castor-oil should be administered, or a drop of croton-oil may be given. If the secretion of the kidneys be not reëstablished, dry cups must be applied to the loins, or four or six ounces of blood may be removed by cut cups. As improvement takes place, frequent sponging of the whole body with vinegar and water, and the free use of the alkaline mineral waters, are beneficial.

The patient must be kept absolutely at rest. If mucus accumulate in the throat and mouth, he must be turned upon his side, or even upon his face.

Hypodermic injections of morphia (gr. $\frac{1}{6}$ to $\frac{1}{4}$) are useful.

On no account is general blood-letting to be practised.

The management of the milder forms of heat fever is very simple. *But in all cases medical advice is to be sought.*

To those exposed by their avocations to the action of high heat, a few words of advice as to the precautions by which the dangers of sunstroke may be lessened.

Temperance in living; the greatest moderation in the use of alcoholic beverages, or, better still, total abstinence; cleanliness; frequent bathing and friction of the skin. Puddlers, furnace-men, persons who *fire* china-ware, expose themselves with impunity to

a temperature far above that of the body in sunstroke, for the reason that the skin acts freely. It is bathed in a proper perspiration, which evaporates with a rapidity proportionate to the surrounding heat, and in this way keeps the body at its normal temperature. With a dry, non-acting skin, these men would scorch. The clothing should be light and loose; thin flannel is the best underwear for the body. The head covering must be light and wide, so as to protect the face and neck. The evaporation from a wet handkerchief, or the countryman's cabbage-leaf in the hat, keeps down the heat. Over-fatigue is to be shunned and long hours of rest courted. The sleeping-place must be the coolest possible, and well ventilated.

CHAPTER III.

SUMMER DIARRHŒA AND DYSENTERY.

DIARRHŒA and dysentery occur at all seasons of the year and in all climates, but they are most common within the tropics, and elsewhere most frequent in hot seasons.

TABLE

SHOWING THE MORTALITY IN PHILADELPHIA FROM DIARRHŒA AND DYSENTERY IN EACH MONTH OF THE YEAR 1878.

1878.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
Diarrhœa.....	8	7	4	6	6	12	9	19	23	12	8	7
Dysentery....	2	3	2	2	2	3	6	13	9	8	3	2
	Winter, 26.			Spring, 31.			Summer, 79.			Autumn, 40.		

Deaths reported under the heading of Cholera-Infantum and Cholera-Morbus, are not included in this table. Exclusive of these, it is seen that simple non-epidemic affections of the bowels are much more fre-

quently fatal in summer than in the other seasons; the ratio being about 3 to 1 for the winter; 2.5 to 1 for the spring, and 2 to 1 for the autumn. But it is not to be forgotten that the acute form of the affections arising in summer, from causes prevalent at that season, may run on into the chronic form, and destroy the life of the patient after many weeks, or even months, of sickness. That this is the cause of the excess of the mortality for the autumn, as compared with the spring, cannot be doubted.

A brief consideration of the morbid processes which characterize these affections of the bowel, and the causes that give rise to them, will serve to explain their greater frequency in hot weather and in hot climates. Our knowledge of the diseases will, however, be gained with less difficulty, if it is sought in connection with some general knowledge of the anatomical structure of the bowels, and their physiological action in health.

The bowel (or intestine) consists of a membranous tube about twenty-five feet in length, and of varying diameter; its upper or narrower portion, about twenty feet in length, is called the small intestine; its lower portion, which is of much greater diameter and about five feet in length, the large intestine. It is capable of contracting when empty, and of very great distention by its contents, particularly under some conditions of disease. The large and small intestines

are each divided into parts, which are rather of convenience for anatomical description than based upon anatomical differences of structure. The whole lies coiled up in the cavity of the belly, at various points attached directly to the posterior wall of the cavity and to other organs, but in the main supported by a membranous fold of the peritoneum (*mesentery*) which encircles the bowel forming its outer layer, and passes back to be attached to the parts in the neighborhood of the back-bone, thus allowing a certain amount of freedom of motion to the bowels within the cavity in which they lie. The upper end of the bowel is given off directly from the stomach. This great tube is very far from being a simple membranous canal. It consists of three layers, one outside the other, held together by delicate sheets of connective tissue. There are, first, the outer layer (*serous*), spoken of above; secondly, the muscular layer, consisting of fibres encircling the tube, and others running lengthwise; and, third, the mucous layer, which is innermost, and constitutes the lining of the tube. This inner layer is richly supplied with glands of several kinds. It is thrown up into innumerable folds, which vastly increase its extent of surface; and it is penetrated almost to its surface by fine blood-vessels and absorbent vessels, the walls of which reach so near the free surface, as to be in many places only covered by a thin layer of the cells (*epithelia*) which cover the

mucous membrane. This surface presents, besides the folds spoken of above, innumerable minute projections (*villi*), which give it a velvety appearance; they contain the finest twigs of the lacteal or absorbent vessels. Between the muscular and mucous layers are placed the nerves of the bowels, and the blood-vessels which constitute an extremely rich and fine net-work. At a distance of nearly four inches from its upper end, the common tube which conveys the fluids secreted by the liver (the bile) and by the pancreas, or sweet-bread (the pancreatic juice), the two great digestive glands of the body, enters the bowel.

The function of the bowel is much more than a mere mechanical one. The processes of digestion, begun so actively in the stomach, are here continued. And it is through the walls of the intestines, by means of the lacteal vessels contained in the villi, and the walls of the blood-vessels which so closely approach the surface, that the absorption of the digested food-substances takes place. In order that absorption may take place, the processes of digestion must prepare the food. Putrefactive decomposition, with the production of excess of gases, is prevented by the bile, which aids also in converting part of the fat into a soapy solution, and which by its presence otherwise aids in the digestion of fats; the pancreatic juice converts starchy substances into sugar with energy,

and, like the bile, digests the fatty portions of the food; the juices secreted by the intestinal glands possess a feeble digestive power, but are endowed with the property of dissolving various principles of the food (fibrin, albumen), and of converting cane-sugar into grape-sugar. No portion of the food can be absorbed except in complete solution, and the juices of the bowel not only effect this solution by the various chemical processes just spoken of, but they also supply the amount of fluid necessary for the purpose. During digestion, these juices are secreted and reabsorbed with marvellous energy, and in enormous amounts. But the food eaten is not all of it capable of complete digestion; much is insoluble, inert, mere bulk, and incapable of supplying the wants of the body. This must be moved inwards to be ultimately expelled. This is the function of the muscular coat of the bowel. The encircling fibres contract from above downwards in waves, which sweep the contents of the bowel onwards before them, a process in which the longitudinal fibres aid. This is called the vermicular or worm-like motion of the bowel. These fibres belong to the muscular system of organic life, as it is called, and their action is not under the control of the will. They contract under the influence of locally acting causes, as for example the distention of the intestinal tubes by partially digested food and the like, and being independent of the brain, they have a supply

of minute nerve-centres (*ganglia*) of their own. The processes above described take place most actively in the small intestine, but absorption still goes on in the large intestine, as is shown by the facts that the bowel contents, hitherto fluid, here lose moisture, and begin to solidify, and that nutritious and medicinal substances introduced into the bowel disappear, and produce constitutional effects.

It is very important to bear in mind that the walls of the blood-vessels lie so near the surface of the mucous membrane, that the absorption of some of the dissolved food-substances takes place by simple diffusion through them; for if fluid, under the ordinary circumstances of health, can thus enter the blood, it is not difficult to understand that it may, under circumstances of disease, pass in the opposite direction out from the blood-vessel into the bowel.

The morbid processes which give rise to diarrhœa, may consist of an intensification of the healthy physiological processes, such as increased action of the muscular coat, by which the fluid contents of the small intestine are too rapidly hurried on, or an excess of the secretions of the liver or pancreas, or of the intestinal glands themselves, giving rise to an amount of fluid too great to be readily absorbed, or incapable of absorption by reason of alterations in its character, or the passage of the watery portions of the blood into the cavity of the bowel, such as has been above

spoken of; or, on the other hand, diarrhœa may be due to an arrest of the function of absorption, or these conditions may be, as is probably most frequently the case, variously combined.

The abundant blood-supply of the bowels, their great functional activity, the elaborateness of their organization, and the complexity of the processes taking place in them, render them extremely liable to functional and to inflammatory derangements, both primary, that is, having their cause in the intestines themselves; and secondary, that is, dependent upon disorders of other organs, or diseases of distant parts of the body.

Diarrhœa is a symptom of disease rather than a disease itself. In the simplest forms of diarrhœa, the symptom constitutes the chief, if not, indeed, the only, manifestation of illness, both to the patient and the doctor; and with the relief of the diarrhœa a cure is established.

Disturbances of the nervous system and intense mental emotion occasionally give rise to transient diarrhœa. Dr. Flint relates the case of a surgeon who, whilst performing an important operation, was so affected by anxiety and the sense of his responsibility, that a violent attack of diarrhœa immediately came on, and he was obliged to relinquish his instruments, and retire from the room.

Exposure to cold not infrequently gives rise to this

affection by driving the blood from the surface of the body to the internal organs, thus producing in the bowel an excess of blood (congestion), which is relieved by the escape of the watery parts into the bowel, and an increased production of fluid by the intestinal glands.

The affection known as "cold," or "catching cold," (see Chapter VI.,) sometimes manifests itself as a diarrhœa; and a "cold in the head" is not infrequently attended by slight, transient diarrhœa, particularly as it is passing off.

Exposure to intense heat may also occasion diarrhœa, which is then probably due to some disturbance of the nervous system. The abrupt alternations of hot day temperatures with cool night temperatures, is particularly apt to produce it. Over-exertion is likewise not an infrequent cause. Malarial influences are often concerned in the production of diarrhœa, which may then be of an intermittent type. And in this connection are to be mentioned a numerous group of diarrhœas due to the inhalation of sewer-gases, the emanations from cesspools, from decaying animal and vegetable substances, the accumulations of filth about ill-kept yards and dwellings, and the like causes which abound in hot weather, which are very destructive to health, and which are entirely within the control of man. Such atmospheric influences, even when powerless in themselves to originate

disease, are active in keeping it up. I once saw several cases of simple diarrhœa, of a most obstinate character, in one wing of a hotel at the seaside, which was evidently kept up by the emanations from privies, so situated that the prevailing winds blew over them into this part of the house. Elsewhere in the hotel similar cases recovered in a few days. And all of the cases in question at last promptly got well, some on being transferred to the main part of the hotel, others on being sent elsewhere.

The drinking of water contaminated by similar substances is a cause of diarrhœa not to be overlooked. Diarrhœa is often attributed to change of water by those travelling, when it is in fact due to other causes, errors of diet, exhaustion, and the disarrangement of the regular habits of life.

Children and young infants are especially prone to affections of this kind, particularly when teething, and in summer. The affection known as cholera-infantum, or summer complaint, will be considered in the next chapter.

But the most common cause of diarrhœa is defective or arrested digestion, especially that part of the whole process which goes on in the intestines. The diarrhœa which follows imprudence in eating, both in the quality and the quantity of the food, is familiar to every one. Particular articles of diet will always cause the disorder in some individuals. Articles

capable of producing chemical or mechanical irritation of the delicately organized lining membrane of the bowel, will give rise to diarrhœa. Coarse, indigestible articles of food, unripe fruit, or fruits containing indigestible seeds, or the acid or sub-acid fruits in excess, and large amounts of coarse vegetables, containing much fibrous matter, may be enumerated among these. When the digestion is enfeebled, as it is during the heats of summer, or when the intestines are unduly sensitive, the ordinary food, or even a restricted diet, may be the cause of the trouble. In some cases the accumulation and retention of hardened masses in the bowel occasions diarrhœa by their acting as a mechanical irritant, just as coins, rings, and the like, when accidentally swallowed, may occasion similar trouble, which usually forthwith subsides as soon as they are voided. This is true of most of the simpler forms of diarrhœa. As soon as the offending substance, the irritant, is voided, the trouble to which it has given rise ceases, unless inflammation has resulted, in which case the diarrhœa may continue, but with a tendency to ultimate recovery.

Diarrhœa is a symptom of various constitutional states and diseases; among these, general debility from various causes, from deprivation of food, from too long-continued nursing, may be mentioned; so also congestions of the liver and other organs, the last

stages of consumption, and of some forms of Bright's disease of the kidneys. In the last of these it is not to be incautiously checked, as by this means the tissue-waste, which the diseased kidneys are no longer able to discharge from the body, is gotten rid of.

Pain is usually present; it is often of a colicky nature, and relieved by an action of the bowels. It is apt to be more or less constant, with tenderness when there is actual inflammation (*enteritis*), in which case fever is present. Diarrhœa is occasionally unattended by pain of any kind. The movements of the bowel may vary in number from three or four in the twenty-four hours to twenty or more; and their character is not less variable than their number. If the attack be due to acute indigestion from an overloaded stomach, or other cause, vomiting may be present; it does not, however, as a rule occur.

The inflammation of the mucous membrane of the bowel may assume the chronic form, or ulceration may occur, and chronic diarrhœa result. It is of the utmost importance that the cause of every case of diarrhœa should be at once ascertained and corrected, and that the diarrhœa itself, if it do not shortly cease, be promptly treated. The adage, "Resist the beginnings of evil," is especially applicable here.

The exhausting heats of summer, the direct action of the sun, the suddenness of temperature changes, and the diminished protection against them afforded

by lighter clothing, the vicissitudes of hotel life and of travel, the disarrangement of confirmed habits of living, all increase the liability to bowel disorders. Then changes in the character of the food, the larger proportion of vegetables and fruits consumed, the more perishable nature of food-substances, and the greater risk of their having undergone slight putrefactive changes, the drinking of unaccustomed water, and the greater danger of its not being pure in the hot season, likewise exert their influence in favoring the development of these diseases.

Fortunately, the greatest number of the cases of summer diarrhœa in adults are of a simple character, and cease upon the removal or avoidance of the cause, which is, as a rule, not difficult to discover.

It is very important that those prone to affections of the digestive organs should learn to recognize the special exciting causes in their own cases, and so avoid them. If it be cold, or the abruptness of temperature changes, a light flannel bandage under the merino underwear of summer should be used, and exposure to draughts of air carefully shunned, especially when fatigue exerts its depressing influences; if the change of water, a dash of essence of ginger may avert trouble; if the danger lurks in certain craved-for dishes, fortitude may take a lesson from not unforgotten pangs; if in foul air and stenches, refuge must be taken in flight to purer haunts.

Exhaustion and fatigue enter largely as factors in the production of summer diarrhœa. Many things, at other times harmless, act as exciting causes when we are tired and used up. It is important, then, to husband the forces of the body as far as possible, and, when unavoidably worn out, to be unusually vigilant about what we eat and drink, and put on or put off in the way of raiment.

The management of a simple case of diarrhœa demands the consideration of four points: (1,) the removal of the cause; (2,) repose of the body; (3,) bland nourishment; (4,) medicine, if required.

(1.) After what has been said concerning the causes, it is only necessary to add that, if there be offending material, such as undigested food, hardened masses of substance that should have been expelled, etc., still retained in the bowel and acting as an irritant, it must be got rid of. To this end, mild laxatives are to be employed, and we, most of us, still trust to the use of the household remedy of a tablespoonful of castor-oil with laudanum (from 1 or 2 to 15 or 20 drops, according to the age of the patient and the urgency of the distress). A solution of the citrate of magnesia may be used, if it can be obtained. The necessity for measures of this kind will be determined by inquiry into the urgency and the character of the attack.

(2.) Just as fatigue has a large influence in causing diarrhœa, so over-exertion is baneful in keeping it up.

I do not mean that which would constitute over-exertion to the individual in his usual health — far less any amount of bodily exertion which is attended by effort in his sickness. There is scarcely any remedy so useful in acute intestinal disorders as repose, absolute rest in the recumbent posture, or as nearly that as is practicable.

(3.) The diet must be regulated. All articles difficult of digestion must be eschewed. Milk and the milk-foods, the lighter starch-foods, farina, rice, and the like, custards, meat-broths, small quantities of the red meats, under-done, and dry bread a day old, or toasted and in restricted quantities, make up the bill of fare. Food should be taken often and in small amounts. A little red wine and water, or sound spirits well diluted, or wine whey, will be advantageous in counteracting debility.

(4.) In many cases no medicines will be needed. The medicine-chest will afford a drop or two of chlorodyne, a teaspoonful of paregoric, or five drops of laudanum for the adult, and domestic medicine will attend to the application of spice- or mustard-plasters, or mush poultices with mustard and plenty of grease, if the pain is continuous or severe. If these fail, send for the nearest doctor of repute and experience.

Cholera-Morbus is the name given to an affection of the stomach and bowels common enough in hot weather, and rarely seen in this climate at other seasons. In many respects it resembles true or Asiatic cholera, and the more severe cases can only be distinguished from that pestilence by the fact that the disease in question does not occur in an epidemic form. At the outbreak of epidemics of cholera, these two affections are not distinguishable, and in fact they have much in common, the chief points of difference being connected with difference of causation and the far milder course of cholera-morbus.

This disease is therefore sometimes described under the names European cholera, English cholera, and, from its occurring in isolated or single cases, sporadic * cholera.

The attack is often sudden; it may, however, be preceded for a few hours by a sense of discomfort in the bowels, with colicky pains, nausea, and slight diarrhœa. It occurs most frequently at night, and begins with vomiting, to which speedily succeeds purging, only to be followed again by repeated vomiting and purging in rapid succession. With these symptoms are associated pains of a crampy or colicky nature in the pit of the stomach and over the whole of the abdomen, anxiety, a sense of oppression and

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* *Sporadic*, "scattered," from σπειρω, "I sow."

great general distress. The acts of vomiting are sudden and forcible, and the matters vomited consist at first of the food that has been taken; later, of fluid of an acid or acrid character, and bitter to the taste from the admixture of bile. The evacuations from the bowels are large, and attended with pain in the abdomen and pain of a bearing-down character. As the attack progresses they become watery in consistence, and in severe cases they are sometimes colorless, and resemble the "rice-water" discharges of epidemic cholera. There is sometimes severe pain in the back.

Thirst is urgent; it is only momentarily relieved by drinking, which is apt to provoke vomiting. There is not usually great tenderness over the abdomen. Cramps occur in various parts of the body. The patient is pale, haggard, restless, and exhausted in proportion to the length and intensity of his sufferings. The pulse is feeble, the skin cool, or even cold, and is often covered with sweat.

The attack is usually of only a few hours' duration. The vomiting and purging become less frequent, the pains subside, thirst is less urgent, the anxiety and restlessness are calmed, and the patient falls asleep. Irritability of the stomach and slight diarrhœa may last a few days, but complete recovery takes place in most cases with a rapidity that is remarkable when considered in relation to the violence of the attack

and the urgency of the symptoms. But this is not always the case. Elderly persons, and those who are debilitated by previous disease, not unfrequently make tardy recoveries. A gentleman under my observation, who had suffered from long-continued dyspeptic troubles, was many months in regaining his usual health after a sharp attack of cholera-morbus, which left him with great and persistent irritability of the stomach, and a troublesome tendency to diarrhœa.

In rare cases the affection pursues an unfavorable course to a fatal ending. The vomiting and purging go on uncontrolled, the pulse grows feebler, the face becomes pinched, the surface cold and shrivelled, and death takes place in the course of a few hours.

This affection presents in most instances the symptoms of very great disturbances of the nervous system, and frequently occurs in those who are exhausted from over-exertion, worriment, or anxiety. It spares no age, but attacks with diminishing frequency the old, and less often women than men. It is extremely common and frightfully fatal in infancy, and constitutes the disease known as cholera-infantum, hereafter to be considered. Indigestion must in many cases be regarded as the exciting cause, and the eating of certain articles of food, such as fruit, ices, and animal food not perfectly fresh, often appears to have caused the attack. It is sometimes attributed to copious draughts of iced water, taken by persons who are tired and overheated.

The pain is in part due to spasm of the muscular walls of the stomach and intestines, in part to neuralgia. The large quantity of fluids lost by vomiting and purging is due to a direct transudation or leakage of the watery portions of the blood through the walls of the vessels into the stomach and bowels, to which is also due in part the pinched expression of the face; while the anxiety, restlessness, and tendency to collapse are to be referred to a profound disturbance of the sympathetic (or vaso-motor) nervous system.

These are the chief points of treatment, set down in the order of their importance: — (1,) To tranquillize the irritated nervous system; (2,) to check the vomiting and purging; (3,) to relieve pain; (4,) to assuage the torturing thirst; (5,) to induce sleep, and (6,) to secure rest and a suitable diet during the rapid convalescence.

The drug upon which reliance can be placed to meet the greater number of these indications is opium. It tranquillizes the nervous system, it checks the movements of the bowels and quiets the stomach, it is the foe of pain, it induces sleep. It may be given in various ways, and various preparations of it may be used. The hypodermic syringe in the doctor's hands is a heaven-sent blessing in these cases. A quarter of a grain of morphia thus given, and, if necessary, once or twice repeated, will work wonders. Twenty drops of laudanum (the deodorized) in a tea-

spoonful of water may be given to an adult while the doctor is coming. It will be at once rejected in all probability, and must then be repeated. The patient's outer clothing must be removed, and as far as possible rest in bed secured. Mustard-plasters must be applied to the abdomen and to the extremities, if the circulation flag, in which case rubbing with dry mustard is also useful. Drink must be restricted to a tablespoonful of iced water with a few drops of spirits, every 15 or 20 minutes. Iced champagne in the same small doses will often be retained when all other fluid is instantly rejected. Lumps of ice may be swallowed at will. During the attack, unless it be unusually protracted, the patient needs no nourishment; as soon as the vomiting is less urgent, hot beef-tea in tablespoonful doses at intervals of an hour will be acceptable, or in lieu of this the London Company's, or Johnston's or Valentine's meat-juice iced. The next day rest, a milk-and-broth diet, and small doses of pepsine, or perhaps no medicine will be needed, and that is just as well. But the person who has had such an attack must look out for himself for the remainder of the summer, and keep quiet, and eat selected, wholesome food, and not too much at a time when he is very tired.

DYSENTERY is a disease of hot climates; within a belt of 35° north and south of the equator, there

are lands never free from it. Regions of India, Asia, the explored coasts of Africa, South America, and the West Indies, within this belt, are dysentery countries. With us it is rare in the epidemic form, except in military life; but it is common enough, as a "scattered" or sporadic disease in the hot season, to be classed properly among the diseases of summer.

The epidemic form of dysentery is thought to be due in whole or in part to miasmatic influences connected with the nature of the soil in particular regions; with this various other exciting causes concur in producing the attack in individual cases. The precise nature of the miasma is unknown, just as the precise nature of the malarial poison is as yet undiscovered. These entities are known to us only by their constant effects. Epidemic dysentery and malarial fevers are frequently prevalent in the same districts. Non-epidemic or sporadic dysentery is due to the action of various causes similar to those which induce cholera-morbus; it may be regarded as bearing the same relation to the epidemic form of the disease that cholera-morbus bears to epidemic or Asiatic cholera.

Unlike diarrhœa, dysentery is a disease, not merely a symptom.

Fever is frequently absent; when present, it is usually moderate. The characteristic manifestations of the disease are distressing, twisting, colicky pains in the

abdomen, with a constant tormenting desire to have the bowels moved, and violent straining and bearing-down pains, these efforts resulting in the passage of small amounts of mucus or blood, or these commingled, often nothing more. The dysenteric symptoms are usually preceded for a few days by diarrhœa. The duration of the disease is from four to twenty-one days. The acute form may run on into the chronic under unfavorable circumstances.

The structural changes in dysentery consist in inflammation and ulceration of the mucous membrane of the large intestine, especially and most commonly in its lower portion, the glands being especially involved. The restriction of the processes of the disease to this part of the bowel will explain the common limitation of pain on pressure to those portions of the surface of the abdomen overlying the large intestine, whilst the inflammation of the mucous membrane of the bowel explains the increased secretion of altered mucus, and the presence of blood in the stools. The bearing-down pains, and constantly returning desire to have the bowels moved, are due to the swollen condition of the lining membrane of the bowel, and to spasm of its muscular coat, which is, doubtless, also concerned in producing the violent twisting pains in the abdomen which characterize the disease. There is no reason to believe that this form of dysentery is contagious. It is not usually a highly

dangerous malady, except in persons whose powers of resistance are feeble, or who have been debilitated by previous disease, extreme old age, or other causes. Its course appears to be modified, both in duration and intensity, by judicious treatment; but the converse of this proposition is also true, and the responsibility of the management of each case should be promptly transferred to medical hands.

CHAPTER IV.

CHOLERA-INFANTUM.

THIS term is very loosely applied, both popularly and by many medical men, to several different affections of the stomach and bowels occurring in infancy.

Of these the principal are (1,) diarrhœa from indigestion following improper food, exhaustion from heat or other causes; (2,) true inflammation of the mucous membrane of the bowels, from the more intense action of the causes which produce simple diarrhœa, or their long-continued working; (3,) dysentery, and (4,) sporadic cholera, or cholera-morbus, which may occur alone, or, under circumstances favorable to its development, during the course of any of the others.

It is to the last of these that the term cholera-infantum is properly applicable, and to which it would be accurate, scientifically speaking, to restrict it.

As we have already seen, heat and hot weather are largely concerned in the causation of acute affections of the stomach and bowels at all periods of life. The influences of climate in this respect are twofold; first,

by the direct action of the heat, and, second, by the special modifications of diet which the hot season brings about, which consist in an increase of the variety of articles and their more complex nature, and in the greater danger of the development of noxious or irritating principles in the food in consequence of the chemical changes attending decomposition and the like, processes favored by heat.

The more delicate organization of the body of the young child makes it far more liable to the influences under consideration than that of the adult. It feels the depressing effect of great heat more speedily and more profoundly, for its nervous system is much more sensitive and much more fragile; and it suffers from changes in its food that would not affect the adult, for the reason that its digestive system is as yet not completely developed, and therefore incapable of more than the simplest processes of digestion. Moreover, the food of infancy is of the most sensitive and perishable kind. It does not surprise us to find that these affections are most prevalent and most fatal in the earliest periods of life; but we start back aghast from the statistics which set forth the enormous mortality from them, and we are filled with dismay at the reflection that much of the sickness, suffering, and life-waste caused by this class of diseases is entirely preventable.

The folk-term "summer-complaint," which is ap-

plied to this group of affections, expresses the popular recognition of the causative relation which climate bears to them.

TABLE

SHOWING THE MEAN MONTHLY MORTALITY FROM ACUTE AFFECTIONS OF THE STOMACH AND BOWELS, UNDER THE AGE OF FIVE YEARS, COMPARED WITH THE MEAN TOTAL MORTALITY FROM ALL CAUSES AND AT ALL AGES, AND WITH THE MEAN MONTHLY TEMPERATURE, COMPILED FROM THE RECORDS OF THE SEVEN YEARS FROM 1862 TO 1868, INCLUSIVE, IN PHILADELPHIA.

Month.	Mean Mortality from Causes Named Under the Age of Five.	Mean Total Mortality for Seven Years.	Mean Monthly Temperature for Seven Years.
January...	12 4/7	1296 5/7	30.87°
February.	4 6/7	1206 5/7	33.89°
March.....	6 5/7	1344 2/7	40.85°
April.....	10 5/7	1281 1/7	52.27°
May.....	14 6/7	1234 2/7	62.77°
June.....	82 6/7	1178 1/7	71.97°
July.....	417 1/7	1837	77.71°
August....	361 5/7	1825 3/7	76.62°
Septem...	102	1215 3/7	68.31°
October...	163 3/7	1218 1/7	56 30°
Novem....	36	1052 1/7	46.68°
Decem....	13 1/7	1191	34.70°

The influence of hot weather is so great that the mortality rises and falls with the mercury, and becomes enormous during the hottest months of the year. It is during these months, namely, July and August, that the greater number of cases of real cholera-infantum occur; and it is to be doubted if

cases outside the season from May to October are of a true choleraic character.

It is scientifically of great importance that the various diseases included under this designation should be carefully distinguished. Their symptoms vary, their course is different, and the processes which characterize them are not the same; but their causes are common, and, in considering them from this practical stand-point, they may be regarded as a group of disorders very closely allied.

Atmospheric heat is a sufficiently common cause of all the forms of disease classed under the head of cholera-infantum. Impure air, from inadequate ventilation, from the decomposition of animal and vegetable substances, and from personal uncleanliness in overcrowded dwellings, is also an important cause; hence, the vastly greater frequency of these diseases in cities, and particularly in the crowded and dirty districts inhabited by the poor. The exciting cause is usually improper food, though it is occasionally associated with abrupt changes of temperature, especially during sleep or at night, when the baby has not been sufficiently covered. It will aid us in our attempt to acquire practical information upon the subject of these disorders, if we direct our attention briefly to the natural food of infancy, and to the nature of the digestive processes in the early periods of life.

Under circumstances unmodified by the influences

of artificial living, the milk of the mother is the sole food required by the young infant. It is secreted in sufficient quantity, and contains the principles necessary to growth and nutrition in a soluble and most easily digestible form, so that digestion makes but slight demands upon the organs. This is in accordance with the undeveloped condition of the baby's glandular system, which affords to a most limited extent, and in minute quantities, the necessary solvents and ferments for the chemical changes which effect digestion in their developed state. Blessed are the babes whose mothers can supply them with all the food they need, and who are proud and happy to do it. If they are sweet-tempered and pure-minded, and enjoy that best of Heaven's boons, good health, it will be a joy rather than a hardship; and their healthy babies — rosy, well-nourished, plump, smiling asleep and crowing awake — will have that best start in life within a human being's reach, a well-laid foundation for a life of healthfulness and good temper. But, alas! too few mothers are so happy, and too many madly throw away this blessing of motherhood from selfishness, and many must give it up for health, and some die and leave the little one to a practical and not very sentimental world. A large number of babies must be otherwise supplied with food. The best substitute, but a long way after the mother's milk, is that of a nurse. But, aside from the objection that another

child is too often deprived of its natural rights, there are inconveniences of a very serious kind associated with the employment of wet-nurses, in consequence of the social classes from which they are recruited as a rule, their undisciplined characters, their untidy personal habits, and their ignorance and imprudence in the matter of attending to their own health. For the milk of a nursing-woman is speedily and profoundly modified by her condition, and a fit of anger, or fatigue, or an error in diet on her part, may occasion serious illness in the babe she suckles.

Numbers of children, then, must be *artificially fed, brought up by hand,* and at best they receive a diet which is very different from what it should be, and which is exposed in the course of its preservation and preparation to many risks of contamination and change.

Of all these probably the best is pure, fresh cow's milk, slightly diluted for very young infants in accordance with its richness and the child's digestive powers. The mixed milk from a small, well-kept dairy is, in my opinion, as good as that from one cow, and is more likely to be what it is represented to be. It should be obtained, if possible, twice a day in small cans, or, better, glass jars kept for the purpose, which should be scalded, washed, and set to air as soon as emptied, and again scalded and cooled before being used again. Milk must be kept in an ice-box by itself,

not in a separate compartment, but independent of and away from all supplies of fish, meat, vegetables, fruits, and the like.

The milk of goats may be advantageous under some circumstances, but so little attention is paid to keeping these animals, as a rule, in this part of the world, that it is better to depend upon cow's milk. Milk should be warmed through when given, but boiled milk is neither so digestible nor so nutritious as before cooking, and is not adapted to the wants of the young baby. The milk should be alkaline when taken, otherwise it tends to form in the stomach large and firm curds. To prevent this, it may be rendered alkaline, when necessary, by the addition of a teaspoonful of lime-water or one or two grains of carbonate of soda to each feeding.

The care of the nursing-bottle requires vigilance, common sense, and faithfulness, and very often lacks all three. It must be kept clean. When the child ceases nursing, the bottle, together with the rubber tip, must be at once emptied and washed in warm soapsuds, rinsed and placed in a basin of cold water in which is dissolved carbonate of soda in the proportion of a drachm to the pint. It must be again washed in pure water before being next used. Bottles with simple rubber nipples are far preferable to those with rubber or glass tubes, on account of

the absolute certainty that the tubes cannot be kept clean.

Young children must be fed as often as they are hungry; the habit of the child has much to do with the frequency of required feeding; an interval of two hours is not too long under ordinary circumstances, but it should not be prolonged much beyond this period.

Prior to the age of five months no starchy substances should be given, and I think it a good rule to avoid them still longer, in some cases even until six or eight teeth are through, especially during hot weather.

If good cow's milk cannot be had, condensed milk is an excellent substitute. And foods consisting of starchy matters converted into dextrine and glucose, by a process of artificial digestion as first suggested by Baron Liebig, or some analogous procedures and as prepared by several manufacturers, are useful. I may mention the preparations of Nestle, of Horlick, of Keasby and Mattison, as well borne by infants. But till the appearance of five or six teeth, milk is the proper food. After this, a little arrow-root, sago, wheat-flour or rice-flour may be cautiously employed; simple broth, custard and eggs added to the diet, and the baby may have a chicken-bone to suck. Between the age of one and two years light food may be masticated, and, finally, cut or minced meat, mashed or

roasted potatoes, bread and butter, and carefully selected fruit may be given.

A tendency to constipation, which produces both indigestion and diarrhœa, must be corrected. After the second year, intestinal disorders are less frequent, less easily provoked, and less fatal. It is thus seen that their period of greatest frequency is during dentition, a process which, without doubt, increases the excitability of the nervous system, and thus favors the development of the diseases under discussion, which are largely of nervous origin. The common dread, on the part of mothers, of the second summer is well founded; that passed, the voyage of life lies thenceforth in much less perilous waters.

It is not difficult to understand the anxiety of those having charge of young children, and to whom it is possible, to escape from the city during summer. After the first of June, the earlier they go the better; until the middle of September, the later they return the better. All other considerations being set aside, as regards only the welfare of the baby, it should go out of town. If its mother suckle it, her health will be the better in the country; if a nurse, she escapes a multitude of summer dangers by being out of the city; if the baby be bottle-fed, it is where the milk is fresh and pure, the air uncontaminated and crowding impossible. If it can be avoided, the child should not be weaned during the summer months.

We will now briefly consider in detail the diseases forming the group called cholera-infantum.

1. Simple diarrhœa often comes on suddenly, especially if due to cold or improper food, otherwise it may be preceded for a few days by restlessness, fretfulness, and such symptoms of indigestion as loss of appetite and vomiting; the stools are frequent, and often green; if they are very frequent and watery, there is apt to be thirst. Fever is absent or slight. The general appearance of the child is not rapidly changed. If the malady run on, it is apt to pass into the inflammatory form, and the features, in that case, become pale, and there is manifest loss of flesh and weight.

The avoidance of the cause, a change of diet, simple evacuant remedies, such as castor-oil with rhubarb, or, if there be acidity of the matters vomited or the stools, rhubarb and magnesia, followed by astringents, such as bismuth, chalk mixture and brandy, and pepsine; or the last class of medicines, without evacuants from the beginning, if the bowels have moved often and freely, will usually arrest the disease. Should it show the slightest disposition to become intensified, or to continue under treatment, flight to the sea-shore may alone avert serious trouble. Opium preparations in minute doses are also sometimes required; but I repeat, that it is extremely hazardous to give them to infants, except under the

observation of a physician. And I may here add that the use of the various cordials, drops, and soothing syrups sold in the shops to ignorant and cruel women for the purpose of quieting their babies, is attended with the most disastrous results. I have seen babies thus lulled into a stupor which, in several instances, has been the beginning of an eternal slumber.

2. Inflammatory diarrhœa (*entero-colitis*) may begin as above, or more abruptly. The baby grows rapidly weak, feverish, and fretful. If diarrhœa have not preceded these symptoms, it speedily appears. The stools are frequent, and of a thin consistency; their color is yellow, brown, or green; they are often acid, and sometimes yeasty in appearance, and they contain lumps of undigested casein, or curd. The tongue is coated, and often exhibits patches of thrush; the whole mouth is often red and dry. Vomiting soon ensues. It may occur promptly after food is taken, from irritability of the stomach, or later, in which case it is found to consist of firmly curdled milk, acid, and sometimes in a fermenting state. The stools are now more frequent; they resemble putty-masses, or chopped spinach, or they may be thin, as at first. They now contain little collections of tough, altered mucus. The skin is apt to become chafed from the irritating character of the discharges. The urine is but scantily secreted. The little patient grows

rapidly worse, and in fatal cases acquires a pinched and shrivelled appearance. He is thirsty, but refuses food; he turns peevishly away, moves his head from side to side or burrows it in the pillow, and utters a fretful, constant cry. Convulsions may or may not occur. He sinks into collapse, and quietly passes away. Head-symptoms are not due to inflammation of the brain or its coverings, but to nervous depression, or lack of blood-supply to the head, in consequence of diminution of its total quantity from the diarrhœa.

Under judicious management, especially where it is possible to secure change of diet and *prompt* and radical change of climate and air, as by going to the seaside, many cases may recover. In cities and among the poor the death-rate is frightful. The wide-spread opinion that in this malady the liver is chiefly or largely at fault is erroneous. This view has had a most pernicious influence upon the treatment. Many doctors have in consequence of it used calomel freely instead of using their brains. The changed color of the stools has been found, in most instances, to be due to other causes than altered bile. The disease sometimes becomes chronic, and it may then destroy life after weeks of wasting. Enough has been said upon the subject of diet and change of food; enough, perhaps, on the necessity of change of air. I may add, that if one locality do not benefit the child, it may be

necessary to try another, and that next to the sea-shore upland regions are advantageous. And I must insist upon the cruelty and absurdity of withholding cold water in small quantities from a child burning up with fever, and maddened by thirst from the draining away by diarrhœa of the watery portions of his blood. A little drink, frequently repeated, does no harm in these cases.

3. Dysentery in childhood presents the symptoms of the disease as they are modified by the physiological processes of early life, and does not here demand further consideration.

4. True cholera-infantum (cholera-morbus of infancy) may occur in the course of any of the foregoing diseases; or it may begin without previous illness. In either case the stools are very frequent and watery, often soaking through the napkin like water, with scarcely a discoloring stain; their odor is musty, sometimes they are without smell. Vomiting sets in at once or shortly after the diarrhœa. The irritable stomach promptly rejects all food. Appetite is lost; thirst is eager; the little sick one turns its eyes and reaches out its hands towards the glass of water. There is fever, the head is hot, the extremities speedily become cool. Urine is suppressed; the belly is not tender; there is no reason to believe that there is much pain. The restlessness is caused partly by thirst, partly by the general discomfort of sudden, grave illness and

profound disturbance of the circulation of the blood and the action of the nervous system. Wasting and loss of strength take place with alarming rapidity, the eyes are sunken, the eyelids and lips are half-closed, the pallid skin has a shrunk look, collapse comes on, and death takes place after a course like that of Asiatic cholera. In some instances the alarming symptoms abate and recovery takes place; in others the disease passes into a chronic diarrhœa of the inflammatory form.

The duration in fatal cases is from twenty-four hours to three or four days.

This malady has been thought to be closely allied to sunstroke. I have seen it more than once follow the reckless exposure of infants to the fierce rays of a summer sun; but it must be regarded as a disease of the stomach and bowels.

At the risk of some repetition, I subjoin the following important directions, drawn up by the Obstetrical Society of Philadelphia, and widely and gratuitously distributed by the Board of Health every summer for several years.

Rules for the Management of Infants During the Hot Season.

RULE 1.— Bathe the child once a day in tepid water. If it is feeble, sponge it all over twice a day with tepid water, or with

tepid water and vinegar. The health of a child depends much upon its cleanliness.

RULE 2.—Avoid all tight bandaging. Make the clothing light and cool, and so loose that the child may have free play for its limbs. At night undress it, sponge it, and put on a slip. In the morning remove the slip, bathe the child, and dress it in clean clothes. If this cannot be afforded, thoroughly air the day-clothing by hanging it up during the night. Use clean diapers, and change them often. Never dry a soiled one in the nursery or in the sitting-room, and never use one for a second time without first washing it.

RULE 3.—The child should sleep by itself in a cot or cradle. It should be put to bed at regular hours, and be early taught to go to sleep without being nursed in the arms. Without the advice of a physician, never give it any *Spirits, Cordials, Carminatives, Soothing Syrups, or Sleeping Drops. Thousands of children die every year from the use of these poisons.* If the child frets and does not sleep, it is either hungry or else ill. If ill, it needs a physician. Never quiet it by candy or by cake; they are the common causes of diarrhœa and of other troubles.

RULE 4.— Give the child plenty of fresh air. In the cool of the morning and evening, send it out to the shady sides of broad streets, to the public squares, or to the Park. Make frequent excursions on the rivers. Whenever it seems to suffer from the heat, let it drink freely of ice-water. Keep it out of the room in which washing or cooking is going on. It is excessive heat that destroys the lives of young infants.

RULE 5.— Keep your house sweet and clean, cool and well aired. In very hot weather let the windows be open day and night. Do your cooking in the yard, in a shed, in the garret, or in an upper room. Whitewash the walls every spring, and see that the cellar is clear of all rubbish. Let no slops collect to

poison the air. Correct all foul smells by pouring into the sinks and privies carbolic acid or quicklime, or the chloride of lime, or a strong solution of copperas. These articles can be got from the nearest druggist, who will give the needful directions for their use. Make every effort yourself, and urge your neighbors to keep clean the gutters of your street or of your court.

RULE 6.—*Breast-milk is the only proper food for infants.* If the supply is ample and the child thrives on it, no other kind of food should be given while the hot weather lasts. If the mother has not enough, she must not wean the child, but give it, besides the breast, goat's or cow's milk, as prepared under RULE 8. Nurse the child once in two or three hours during the day, and as seldom as possible during the night. Always remove the child from the breast as soon as it has fallen asleep. Avoid giving the breast when you are over-fatigued or over-heated.

RULE 7. — If, unfortunately, the child must be brought up by hand, it should be fed on a milk-diet alone — that is, warm milk out of a nursing-bottle, as directed under RULE 8. Goat's milk is the best, and, next to it, cow's milk. If the child thrives on this diet, *no other kind of food whatever should be given while the hot weather lasts.* At all seasons of the year, but especially in summer, there is no safe substitute for milk if the infant has not cut its front teeth. *Sago, arrow-root, potatoes, corn-flour, crackers, bread, every patented food, and every article of diet containing starch, cannot and must not be depended on as food for very young infants.* Creeping or walking children must not be allowed to pick up unwholesome food.

RULE 8.—If the milk is known to be pure, it should have one-third part of hot water added to it, until the child is three months old; after this age the proportion of water should be gradually lessened. Each half pint of this food should be sweetened, either with a heaping dessert-spoonful of sugar of milk, or with

a teaspoonful of crushed sugar. When the heat of the weather is great, the milk may be given quite cold. Be sure that the milk is unskimmed; have it as fresh as possible, and brought very early in the morning. Before using the pans into which it is to be poured, always scald them with boiling suds. In very hot weather, boil the milk as soon as it comes, and at once put away the vessels holding it in the coolest place in the house — upon ice, if it can be afforded, or down a well. Milk carelessly allowed to stand in a warm room soon spoils, and becomes unfit for food.

RULE 9.— If the milk should disagree, a tablespoonful of lime-water may be added to each bottleful. Whenever pure milk cannot be got, try the Condensed Milk, which often answers admirably. It is sold by all the leading druggists and grocers, and may be prepared by adding to ten tablespoonfuls of boiling water, without sugar, one tablespoonful or more of the milk, according to the age of the child. Should this disagree, a teaspoonful of arrow-root, of sago, or of corn-starch may be cautiously added to a pint of the milk, as prepared under RULE 8. If milk in any shape cannot be digested, try, for a few days, pure cream diluted with three-fourths or four-fifths of water — returning to the milk as soon as possible.

RULE 10.— The nursing-bottle must be kept perfectly clean; otherwise the milk will turn sour, and the child will be made ill. After each meal, it should be emptied, rinsed out, taken apart, and the nipple and bottle placed in clean water, or in water to which a little soda has been added. It is a good plan to have two nursing-bottles, and to use them by turns. The best kind is the plain bottle with a rubber nipple and no tube.

RULE 11.— Do not wean the child just before or during the hot weather; nor, as a rule, until after its second summer. If suckling disagrees with the mother, she must not wean the child,

but feed it, in part, out of a nursing-bottle, on such food as has been directed. However small the supply of breast-milk, provided that it agrees with the child, the mother should carefully keep it up against sickness; it alone will often save the life of a child when everything else fails. When the child is over six months old, the mother may save her strength by giving it one or two meals a day of stale bread and milk, which should be pressed through a sieve and put into a nursing-bottle. When from eight months to a year old, it may have also one meal a day of the yolk of a fresh and rare-boiled egg, or one of beef or mutton-broth into which stale bread has been crumbed. When older than this, it can have a little meat finely minced; but even then milk should be its principal food, and not such food as grown-up people eat.

Brief Rules for Cases of Emergency.

RULE 1.— If the child is suddenly attacked with vomiting, purging, and prostration, send for a doctor at once. In the mean time, put the child for a few minutes in a hot bath, then carefully wipe it dry with a warm towel, and wrap it in warm blankets. If its hands and feet are cold, bottles filled with hot water and wrapped in flannel should be laid against them.

RULE 2.— A mush-poultice, or one made of flaxseed meal, to which one-quarter part of mustard flour has been added, or flannels wrung out of hot vinegar and water, should be placed over the belly.

RULE 3.— Five drops of brandy in a teaspoonful of water may be given every ten or fifteen minutes; but if the vomiting persists, give this brandy in the same quantity of milk and lime-water.

RULE 4.— If the diarrhœa has just begun, or if it is caused by improper food, a teaspoonful of castor-oil, or of the spiced syrup of rhubarb, should be given.

RULE 5.— If the child has been fed partly on the breast and partly on other food, the mother's milk alone must now be used. If the child has been weaned, it should have its milk-food diluted with lime-water, or should have weak beef-tea or chicken-water.

RULE 6.— The child should be allowed to drink cold water freely.

RULE 7.— The soiled diapers or the discharges should be at once removed from the room, but saved for the physician to examine at his visit.

For the Convenience of Mothers, the following Recipes for Special Forms of Diet are given:

Boiled Flour or Flour Ball. — Take one quart of good flour; tie it up in a pudding-bag so tightly as to make a firm, solid mass; put it into a pot of boiling water early in the morning, and let it boil until bedtime. Then take it out and let it dry. In the morning, peal off from the surface and throw away the thin rind of dough, and with a nutmeg-grater grate down the hard dry mass into a powder. Of this from one to three teaspoonfuls may be used, by first rubbing it into a paste with a little milk, then adding to it about a pint of milk, and, finally, by bringing the whole to just the boiling-point. It must be given through a nursing-bottle.

An excellent food for children who are costive may be made by using bran-meal or unbolted flour instead of the white flour, preparing it as above directed.

Rice-Water.—Wash four tablespoonfuls of rice; put it into two quarts of water, which boil down to one quart, and then add sugar and a little nutmeg. This makes a pleasant drink.

A pint or half a pint of milk added to the rice-water, before it is taken from the fire, gives a nourishing food suitable for cases of diarrhœa.

Sago, tapioca, barley, or cracked corn can be prepared in the same manner.

Beef-Tea. — Take one pound of juicy lean beef — say a piece from the shoulder or the round — and mince it. Put it with its juice into an *earthen* vessel containing a pint of tepid water, and let the whole stand for one hour. Then slowly heat it to the boiling-point, and let it boil for three minutes. Strain the liquid through a cullender, and stir in a little salt. If preferred, a little pepper or allspice may be added.

MUTTON-TEA may be prepared in the same way. It makes an agreeable change when the patient has become tired of beef-tea.

Raw Beef for Children. — Take half a pound of juicy beef, free from any fat; mince it very finely; then rub it into a smooth pulp, either in a mortar or with an ordinary potato-masher, and press it through a fine sieve. Spread a little out upon a plate, and sprinkle over it some salt, or some sugar, if the child prefers it. Give it alone, or spread upon a buttered slice of stale bread. It makes an excellent food for children with dysentery.

Lime-Water. — Take a handful of quicklime, slake it, and put it into a quart bottle full of soft water. Shake the bottle well, and then allow the undissolved portion of the lime to settle. Pour off the clear liquid when needed, replacing it with more water, and afterwards shaking the bottle briskly.

CHAPTER V.

SUMMER AND AUTUMNAL FEVERS.

FEVER is a morbid state characterized by increased body-temperature, quickened circulation of the blood, arrested secretion, and rapid wasting of the tissues of the body. We are as yet ignorant of the essential modifications of the functions of life that cause fever, just as we are ignorant of the controlling principle in that adjustment of physiological processes which constitutes life itself. But with the phenomena or manifestations of fever we are brought into almost daily contact. In the flushed face and burning skin we recognize the signs of increased temperature; in the throbbing head and frequent pulse, those of an excited and unduly rapid blood circulation; in the dry surface and parched mouth and tongue, and the scantiness of other secretions, we behold the evidences of the arrested or perverted working of the glandular system, and in the rapid emaciation of the body, the fact that waste goes on more rapidly than repair.

Fever may constitute the whole sickness. It is then called essential fever. A fever may be due to

some local disease or process of irritation in a particular portion of the body. It then receives the name of irritative or symptomatic fever. As examples of essential fever, I may mention the transient fevers known as ephemeral (because they last a day or so), or febricula (because it is a slight fever), typhoid, typhus, and the like. Here the fever is not a symptom of some other malady, it is the malady itself; as examples of irritative fever, that which follows a wound or a surgical operation, or which accompanies acute inflammation of some organ, as the lungs or kidneys, or the formation of an abscess; in these instances the fever does not constitute the primary disease, it is merely a symptom of it.

Those fevers which run an unbroken course to their termination are called continued; those in which the course of the fever is interrupted are called periodical.

Of periodical fevers, those having a regular period of abatement without actually ceasing are called remittent; those in which the fever disappears to return at short intervals, as the next day, or the second or third day, are called intermittent. Most of the periodical fevers are due to the influence of miasmatic poisons.

Until within a recent period, it was customary to judge of the intensity of the fever by the sensation of heat imparted to the hand of the observer as well

as by the frequency and character of the pulse, and the symptoms in general. In addition to these methods of observation, we are now enabled to ascertain the actual temperature of the body by means of a pocket thermometer, made for the purpose, the bulb being placed in the patient's mouth or armpit. The temperature thus taken in healthy persons is 98.4° Fahrenheit. It is found to be the same in all persons in health, and in all latitudes, with slight variations. It is therefore called the *norme*, or normal temperature. Transient variations within a degree do not indicate disease, especially in childhood, at which period of life the temperature is more easily influenced than afterwards. In shock, collapse, and immediately after the loss of blood, the temperature falls; very great activity causes it to rise, as does inflammation of an acute character. An increase of a degree, or a degree and a half, that is continuous, indicates fever. The thermometer in fever often rises to 102° or 104°. If it reach 105° in continued fever, the case is grave; a temperature of 106°, which does not promptly fall, indicates great danger; and above this a fatal result is to be dreaded. In periodical fevers, when the rise in temperature is of short duration, it is frequently very high. In fatal cases of acute rheumatism it may reach 109° or 110°. And, as we have seen, it may reach 110°, or exceed that in sunstroke, which is a fever of great intensity. In

many instances, where death takes place in consequence of the rapid, overwhelming increase of the heat of the body, the temperature rises a degree, or even more, during the first hour or so after life has become extinct.

There is a daily slight variation in the normal temperature, the highest point being attained in the latter part of the day, the lowest being reached before dawn. There is a corresponding diurnal temperature revolution in fever; the rule being that the evening temperature exceeds by some part of a degree or more that of the morning; although in rare instances the range is the reverse of this, the temperature being higher in the morning than in the evening.

Many fevers, and many maladies accompanied by fever, have a regular temperature course from beginning to end,— the typical fever-range of the disease. Hence, medical thermometry, as it is called, is of great value in discriminating diseases; and it often enables the physician to predict with definiteness the duration and the ultimate result of an attack of sickness.

Irritative or symptomatic fevers occur frequently in summer as at all seasons of the year, and they are especially apt to show themselves in young children. Thus an attack of simple indigestion which is speedily over may be attended with high fever while it lasts; and this is true of any local irritation or inflammation, such as the irritation of teething or the inflammation

of the mouth and gums, which in some infants attends the cutting of the teeth, inflammatory diarrhœas, or, as we shall see hereafter (Chapter VII.), acute affections of the skin and the like. Closely allied to these forms of irritative fevers, but different in causation, are the transient fevers which result from direct exposure to heat, from over-exertion, exhaustion due to any cause, from chilling or "catching cold," when it produces simply a constitutional and not a local disturbance.

This last group of fevers includes those which are most common in hot weather, and which are the most easily avoided by care and prudence.

In the chapter on sunstroke and heat fever, we have seen how direct and how potent is the action of heat in causing fevers of varying gravity; and, later, we have seen that heat and improper exposure to the sun is a powerful cause of intestinal disorders at all periods of life. But it will not in this connection be amiss again to point out the influence of this agent in the production of fevers which are in truth nothing more or less than simple continued fevers, and to call attention to the fact that an influence, which in certain individuals or under certain circumstances provokes an attack of diarrhœa, or cholera-morbus, or of summer-complaint in children, will in other persons or under different circumstances occasion simply an attack of fever. If the exposure to heat be combined with over-exertion, sickness is the more likely to fol-

low. How often do we find that the intense, burning fever, with throbbing head, restlessness and delirium, that comes on in young lads at bedtime, follows three or four hours' bathing in the mill-pond under a fierce July or August sun! This fever in youngsters, after excessive bathing, often shows a distinctly remittent type, which extends over two or three days. I have met with many examples of it at the sea-shore in those who have habitually or occasionally spent too long a time in the bath.

The fever of "catching cold," will be described in the following chapter. It is of short duration, and of much less intensity than the fevers due to the causes we have already mentioned, and it is common enough in summer as in other seasons.

Another very important group of fevers is composed of those due to the action of substances inhaled in the air we breathe, or taken in the water or milk we drink, or in our food, and which act as special poisons in producing fevers characterized by certain definite symptoms and running a more or less definite course.

To this group belong all the epidemic contagious diseases, such as small-pox, scarlet-fever, measles and the like, in which the special poison is redeveloped in the sick person, and from him conveyed by the air or by contact to those around him and in his vicinity, to produce in them the same sickness, in the course of which the poison is developed anew, and thus

spreads from each new sufferer as a centre of contagion to those about him. But with these it is not our present duty to concern ourselves. They are not particularly diseases of hot seasons; on the contrary, they are usually less prevalent in summer than in the other seasons of the year. More germane to our subject, and yet scarcely falling within the scope of this book, are the epidemic non-contagious diseases, such as true cholera, epidemic dysentery, influenza and the like, which are due to poisons disseminated by means of the atmosphere or the drinking-water, and which produce violent disturbances of the functions of the body with most destructive sickness, but which do not appear to be so redeveloped within the body during the illness they give rise to, as to make each case a new centre of contagion, except by means of the direct action of the substances passed out of the body, as the matters vomited and the stools in cholera, and the stools in dysentery, which are capable of causing the disease in others who, for example, happen to drink water contaminated by them.

There are fevers produced by analogous causes, however, which are neither epidemic nor contagious, for the reason that the poisons which give rise to them are of feebler intensity, and consequently act upon a relatively small percentage of the persons exposed to them, and are not reproduced in the body of the sufferer in such a way as to infect his neighbors. These

are the fevers that are common in summer and autumn, though prevalent at all seasons. The poisons that occasion them are, in general, of two kinds—marsh-miasms and sewer-miasms, and the fevers which they occasion are called respectively malarial fevers and sewage fevers.

Marsh-miasm, or malaria, is known to us only by its effects. The most elaborate investigations of science, the most untiring research, have failed to isolate and bring before our senses their cause. But the effects are so constant, so regular, and so exact, that they establish the existence of the cause and the natural laws which it obeys.

Malaria is generated in warm, moist regions; it is most abundant in the late summer and early autumn; hence it is most active in the tropics, and has been attributed to the decay of vegetation. Cold destroys it; it is therefore absent in winter and in high latitudes. It does not ascend to great heights; at 500 feet above the sea-level its effects are but little felt; above 1,500 feet they are unknown. It spreads in the direction of prevailing winds; large bodies of water absorb it; forests prevent its course; certain plants appear to possess the power of neutralizing its effects, among these are the sunflower and the gum-tree, the Eucalyptus of Australia. It is more active at night. It is developed by the first cultivation of virgin soils, by extensive digging, as for the laying of drains, water-

pipes, and so forth, and by other disturbances of the ground, as in grading and the digging of cellars.

The effects of malaria are shown in the production of the periodical or malarial fevers. These may appear within a few days of the exposure to their cause, or not for many months. I attended a lady of middle age in an attack of violent ague, under the following circumstances. She had never had malarial fever in her life, nor had she lived in a malarious district. In August she visited some friends living on the banks of a river malarious throughout its course. She returned home well, and remained there and in good health until the following May, a period of nine months, when the attack came on. Malarial fevers are intermittent, remittent, and congestive. A person once having suffered from them, is liable to a return upon slight exposure to the cause, or other subsequent diseases may be so modified as to show an intermittent character. Malarial diseases often lack the distinct febrile character, and manifest themselves as neuralgias, bilious attacks, or vague impairments of the general health.

From what has been said, it will be evident that it is essential to avoid spending the summer in malarious districts, especially after the middle of July ; that if you are obliged to go into such regions, it is better to avoid the night air, to sleep in an upper room in the house, and to make the sojourn as brief as possible.

It may be added, that quinine should be taken faithfully. Some of the most attractive places in our country are highly malarious, so that, in selecting a summer place, it is most important to inquire into this subject, which is a fruitful cause of both speedy and remote sickness.

Many fevers of low type are due to the contamination of the air, the drinking-water, milk, etc., by the emanations from badly-made sewers, choked drains, and the like. With the general subject of sewage-miasm may be classed the poisons generated in ill-constructed privies, in heaps of decaying offal, and by surface drainage, for in fact these are but detractors and robbers of the good sewer, to which human ignorance and sloth suffer an existence at once offensive to decency and baleful to health.

Those fevers which are due to sewer-miasms are of insidious onset, and at first of mild intensity. A vague impairment of the health is felt, loss of appetite and nausea occur; they are followed by a tendency to diarrhœa, not easily accounted for and not easily controlled; with these symptoms there is headache, increased towards evening, and the patient grows feeble and languid. Unless the cause be suspected, the doctor and the patient are alike puzzled by the vagueness of the symptoms of the sickness; but a careful inquiry will often reveal the cause.

A drain is choked, and some wall in the house or

the cellar floor is soaked with the foul overflow; or there is a leak in a terra-cotta drain-pipe, or kitchen garbage and household slops are thrown upon the ground under the window of the patient's sleeping-room, or the summer breeze blows over some uncleanly place into his chamber; or the privy-well is but a few paces from the well from which his drinking-water is obtained, and he has been slowly poisoned by the rotting waste from his own and a score of other bodies; or else the milk he has been drinking has been watered with some similarly polluted water, or brought in cans washed with it.

In some one of these ways, or by like channels, the poison has reached his blood, and through it caused his sickness. Unknown in its physical attributes, it is too familiar to us in its disease-producing effects. It may be of the nature of some minute organism, or germ, which, finding within the body a resting-place, grows and multiplies; or it may be some gaseous product of the imperfect oxidation of organic matter, which, by its chemical action upon the more delicate tissues of the body, perverts the more subtile processes of life, as a speck of rust deranges the working of the finest watch. There is reason to believe that sewer-miasm is of a complex nature, and that both disease-germs of special kinds and deleterious gases of considerable chemical energy enter into its composition.

If the cause be removed, or the patient removed from the infected neighborhood, recovery takes place slowly; — for the slow-acting poison has too often made serious havoc before it is discovered. But in many instances the poison thus working is of a special kind, and the fever produced is a special form of disease, which once developed must run its course to the end. In typhoid fever we have a too familiar example of such a malady.

Once firmly developed, its course is from three to four weeks, and then follows a tedious convalescence, which may count months before health is regained; whilst in a certain proportion of cases the malady runs on to a fatal issue.

The rich man of old wrote at the threshold of his sumptuous house in Pompeii "*Cave Canem;*" it would be well if the rich men of to-day were to write it in bright letters over their "modern conveniences."

The great diversity of fever-forms, the variety of their causes, their great range of intensity, and the complexity of the disease-processes which characterize them, make it impossible to discuss at length the treatment of fever or of fevers in a brief sketch such as this.

Enough has been said of their causes to enable the reader to avoid some of them, to put him on his guard against many. If I have succeeded in this,

my aim is reached — it is the object of the volume in his hand. Being on guard, he will observe for himself and reflect for himself. Preventive treatment consists in the avoidance of the cause.

In the general management of fever, the chief points to which attention must be directed are these — (1) to reduce temperature, (2) to control the force of the circulation and the frequency of the heart's action, (3) to re-establish the action of the skin, the kidneys and the glandular system in general, and (4) to keep up the nutrition of the body by giving such food and in such quantities as can be best taken up by the digestive organs in their deranged condition.

(1.) Temperature is to be reduced by the abstraction of heat from the body. In mild cases, systematic sponging of the surface with cold vinegar and water or spirits and water answers admirably. It is usually grateful and refreshing to the patient; it promotes cleanliness, and it tends to re-establish the arrested secretion of the skin at the same time that it removes heat. If cold sponging be uncomfortable to the patient, the lotion may be warmed, for it is the rapid evaporation of the thin film of fluid that lowers temperature, so that a grateful tepidity by no means defeats the object in view. Cool and slightly acid drinks may also be given in moderation. In graver cases, more active measures, such as the ice-cap, the

wet pack, the cold bath, will be suggested by the physician in charge, who will at the same time prescribe medicines that have an influence in lowering the heat of the body.

(2.) The action of the heart and the force of the circulation are favorably influenced by the greatest quietude that can be attained both for the body and the mind. All excitement, all hurry, all visits of friends, and conversation on unnecessary topics are hurtful to the person ill of a fever. He should be placed on a firm, comfortable bed; his room should be large, airy, and well-ventilated, and not darkened unless the light disturbs him. The footsteps of the attendants must be silent, their voices low, their manner quiet but firm. Drugs potent to quiet the heart are at hand, but with their choice and administration the doctor alone has to do.

(3.) Cool sponging, the moderate allowance of cold water and acidulated drinks, tend to promote secretion whilst they lower temperature. The action of the glandular system is aided by acting upon the bowels by such remedies as magnesia, Rochelle salts, the solution of the citrate of magnesia, Pullna, Friedeichalle or Honyadi waters, at the same time that remedies directed to the kidneys and skin are used. It is often pleasant to wash the mouth with water containing a few drops of tincture of myrrh.

(4.) The fever patient must be systematically fed.

If the fever is a brief one, whose duration may be counted by hours, he will not suffer much from abstinence from food; but the fevers which last days and weeks make serious demands upon the resources of the kitchen. Systematic feeding means regular feeding, in small quantities and at short intervals. By small quantities I mean 2 to 4 fluidounces (4 to 8 tablespoonfuls) of strong meat broth for an adult and by short intervals, 2 to 3 hours, and in low fevers this must be kept up during the night.

The food must be as far as possible palatable, highly nutritious, and easy of digestion. We look upon meat broths, milk, custards, the more delicate preparations of corn-starch, farina and so on, as the best fever foods. Wines, brandy, whiskey are only to be given as ordered by the medical man in attendance; and in truth it is one of his most important duties to order in detail every article of the patient's food and drink as well as his physic, and to inspect his surroundings as well as to investigate his condition at each visit.

CHAPTER VI.

SUMMER COLDS AND HAY ASTHMA.

WE are familiar enough with the expression, "to catch cold," and scarcely one of us but is too familiar with the disagreeable sensations attending the process, and the usually, but not invariably, unimportant ailments which follow it. Yet it would be difficult for any of us, even in that profession which makes the ills that flesh is heir to the subject of its constant, untiring, and conscientious study, to define precisely what is meant by catching cold.

A person engaged in the usual pursuits of his every-day life, conscious of no change in his surroundings, nor in his relation with them, in weather not even, it may be, characterized by any unusual change of temperature or atmospheric state, becomes suddenly aware that he has caught cold. Or, as more frequently happens, he has made some injudicious change of raiment, or sudden atmospheric changes have taken place, or his feet have been wet; or, after active exercise, he has thoughtlessly seated himself in a draught of air, and the surface of his body, or some part of

it has been chilled. Presently, or after the lapse of some hours, and, in point of fact, often without his being aware that he has been chilled or taken cold at all, he begins to experience the symptoms of a mild, febrile state. There is a general feeling of *malaise*, into which a sense of muscular weakness enters largely; a disposition to shiver, attended with chilly sensations which come and go, provoked by the slightest puff of air, or sometimes by changes of position; the hands and feet are cold, and it is only by toasting before the fire, or being covered up in bed, that feelings of comfortable warmth can be transiently secured. There is a marked tendency to sweating, which adds not a little to the unpleasantness of the situation. If not actual slight fever, there is feverishness, and the heat of the head is in notable contrast with the coldness of the extremities. Muscular soreness, with pain on motion (*Myalgia*) is often present.

Acute inflammatory conditions of internal organs may follow "cold," and in that case the special fever (irritative fever) of the graver malady will show itself. If no complications arise, a cold, or a feverish cold, runs a brief course.

The symptoms following taking cold are usually wide-spread or constitutional; and local symptoms are more frequently manifested at other remote parts of the body than at the part actually chilled. It is not necessary that the entire surface of the body be cooled,

a small area is enough. Nor is it necessary that the change of temperature be very decided, though it is usually more or less prolonged.

Here, as elsewhere, in considering the causes of disease, we must bear in mind that they are of two kinds, predisposing and exciting. It is evident that there must be a marked predisposition to take cold on the part of certain persons, since it happens to them under circumstances in which most people escape. Such persons are usually wanting in physical power, are feebly organized, with sensitive skins prone to perspire on slight exertion, often neuralgic. They take but little exercise, leading sedentary lives, and spending too much of their time indoors. But others, robust, hearty, with good blood and a healthy skin, active and hardened, find at times that they take cold with the greatest readiness and under circumstances in which they usually escape. In these, the predisposing cause is fatigue, mental or physical exhaustion; in a word, that condition of the nervous system which we call "tired." At such times the powers of resistance of the most robust and the wiriest are brought down to the level of the feeble and puny.

The exciting causes will be found to be threefold — a lowered temperature, air in movement, and moisture, or some combination of these three. They act with much greater frequency when the body is at rest than when exercising, and the danger of taking cold is

greatest when at rest after prolonged energetic and fatiguing exertion. Colds are most common in cold and damp weather, but they are by no means unfrequent in summer — without doubt by reason of the greater physiological activity of the skin, and the temptations to relax our customary watchfulness in such matters. How often in summer, tired, over-heated, oppressed, do we throw ourselves at length upon the ground or by a window, and with throat and arms bared, court the welcome breeze that at any other season we would most sedulously shun.

Medical theories concerning the morbid processes of taking cold are as yet mere theories. Ingenious as they are, they depend upon problems in physiology and pathology, which contain very many unknown quantities, and the solution of which can only take place step by step as medical science advances.

The old notion that the whole process was dependent upon suppression of the cutaneous perspiration can scarcely stand against the objections that cold is often taken when the skin is not in active perspiration, or when but a limited area of the surface is chilled; and that, on the other hand, the body is suddenly cooled, and the freest perspiration checked abruptly, in the procedures of the Turkish bath without "cold" resulting; that no symptoms resembling "cold" occur in animals in whom perspiration is wholly brought to an end experimentally by a coat of varnish, and that

moderate fluctuations in the activity of the skin must constantly take place in every-day life without occasioning "cold," the function of the skin as an organ of excretion being to a very considerable extent interchangeable with that of the kidneys and the lungs.

The following hypothesis of Professor Seitz * accords with the present views of the physiology of the nervous system. "When the skin is exposed to cold of sufficient intensity and for a sufficient time, the sensory nerves are thrown into a peculiar state which is propagated to the nerve-centres, and reflected by them along certain other channels which are endowed with special susceptibility to this form of stimulus. Should the affected tract be sensory, we get rheumatic pains or neuralgia; should the vaso-motor centre (the nerve-centre which controls the size of the blood-vessels) be implicated, alterations in the calibre of the blood-vessels may result, especially vascular dilatation (dilatation of the blood-vessels) in particular areas; lastly, should the heat-regulating centre be involved and its activity depressed, fever may result."

The action of cold upon the sensory nerves may be direct, or it may be through the influence of the blood. Individuals differ as to which of the three above-named channels the irritation may follow; some persons

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* Cyclopedia of the Practice of Medicine. — Ziemssen, Vol. XVI., p. 235.

always suffer pains of a neuralgic character, others from so-called muscular rheumatism, others from local congestions, which may run into inflammation, and in that event are attended with fever, or the trouble in others again manifests itself in a transient, mild, febrile disorder, without any indication of local trouble. In each individual the effects of taking cold manifest themselves in "the part of least resistance" to the specially acting morbid influences. My experience would lead me to regard the mild systemic febrile disorder as the most common form, but the congestive is by no means infrequent, and particularly that form of it which affects the mucous membrane of the upper air-passages. The every-day expression, "I have a cold," means in the vast majority of instances that the speaker suffers from some mild, acute, inflammatory trouble of the throat or nasal passages; oftenest the latter.

A "cold in the head" is a minor hardship of life at any season, but a summer cold is a hardship indeed. It is as easy to catch, and a deal harder to get rid of, being kept up by the action of the slightest puffs of air upon an over-sensitive skin on the one hand, and on the other by the local irritations of dust, the perfume of flowers, the pollen of plants, and other substances suspended in the air, which are either not present at all, or to a very much less extent at other seasons of the year. Many influences of this kind, not potent

enough to occasion the affection acting alone, are active agents in prolonging it when fairly established. The popular opinion that this kind of a cold is apt to last longer in summer, is based upon correct observation.

The symptoms are so well known as to make more than an enumeration of them unnecessary. In addition to the slight constitutional disturbance described, there is a sensation of weight or fulness in the head and forehead; frequent sneezing; dryness and redness of the mucous membrane lining the nasal passages; swelling soon succeeds, and there is an increased flow of nasal mucus. At first watery, this fluid soon becomes thicker, and more like matter in character; it is often abundant. The feeling of weight and discomfort in the head is frequently relieved on the appearance of free secretion. The sense of smell and that of taste are usually somewhat, or even greatly, impaired. The inflammation sometimes extends by the route of the tear-ducts to the mucous membrane of the eyes and eyelids, which become red, swollen, and irritable, secreting likewise an excessive amount of altered mucus. By reason of the irritating nature of the discharge, and the violence used in constantly blowing the nose, excoriations not rarely form about the nostrils and upper lip, and occasionally an attack of facial erysipelas follows.

Of the many names applied to the affection, most

have reference to the abnormal discharge, which is the chief symptom. Coryza, catarrh, nasal catarrh, running at the nose, rhume de cerveau, by the French, from the old idea that the flow came from the brain, are the most common terms. The Germans call it "schnupfen," a word almost equivalent to our "snuffles,"—not polite, but expressive. Gravedo is an old name, derived from the sense of weight in the forehead attending the earlier stages of a cold.

The physicians of antiquity held the erroneous view that the secretions of catarrh came directly from the brain, an opinion still vaguely entertained by the people, but which was demonstrated to be false more than two centuries ago (1660) by Schneider, a professor in Wittenberg. This anatomist showed that there were no channels by which such a flow could take place from the interior of the skull, and that the discharge was derived in reality from the surface of that extensive mucous membrane, thickly abounding in blood-vessels, richly furnished with glands, which lines the cavities of the nose and extends as a lining membrane into those extensive, hollow chambers occupying the forehead, the upper jaw-bone, and other neighboring bones of the face, and to which his name has since been applied the world over—*the Schneiderian mucous membrane.* This membrane constitutes the "vascular area," or tract of tissues rich in blood-vessels, most prone to become abnormally flushed with

blood (hyperæmic) in consequence of taking cold. It becomes, as has been said, swollen, dark-red, deeply congested. This explains the pain and fulness over the eyes, the position of the frontal sinuses (spaces in the frontal bone), the sense of fulness or obstruction in the nose itself, and the arrest of the natural secretions, as manifested in a feeling of dryness; for the first effect of deep congestion of every mucous membrane is a more or less complete arrest of its natural secretion. The blood-spaces in the Schneiderian membrane are so relatively large, and their intercommunication is so free, that the contained blood is affected by the action of gravity; and it is often observed that if the sufferer lie upon his side during the period of greatest swelling, when both nostrils seem to be stopped up, the upper one will become comparatively free.

The engorged vessels relieve themselves shortly by a free discharge, which is composed in part of altered secretions from the mucous glands, in part of blood elements (white corpuscles, serum), which, as in every inflammation, find their way through their walls.

Well may the sufferer exclaim in the words of Othello, but with far greater sincerity:

"I have a salt and sullen rheum offends me."

A cold in the head, unless prolonged by fresh exposure, by unfavorable surroundings, or by irritating sub-

stances floating in the air, usually comes to an end in from two to seven days. Chronic catarrh does not result, as a rule, except in scrofulous persons, or those the subjects of some other depraved constitutional state.

Coryza, or cold in the head, is produced in some persons by the emanations from certain animals, as the horse, or from certain flowers, as the rose, or drugs, as ipecacuanha. This form is usually of a very transient nature, although often quite severe. It is closely allied to hay-fever. Some drugs internally administered, as iodide of potassium, occasion similar symptoms.

Some authorities, and not without reason, look upon simple coryza as contagious by direct contact. A mere suspicion of this kind is enough to warrant every precaution on the part of those living in companionship with a person suffering from the disease.

Bronchitis, or inflammation of the lining membrane of the bronchial tubes, sometimes follows a coryza, by extension of inflammation along the air-passages to the bronchial tubes. In such cases there is some special liability to bronchial catarrh.

Whilst it is not to be advised that persons suffering from a cold in the head should neglect it, and refuse to look upon it as a disease, it is candid to say that it is an affection which cannot always be cut short by treatment. Under ordinary circumstances, the symp-

toms being moderate in intensity, no very active treatment is called for, the most useful agents being those of a tonic character, and particularly repose. Quinine, from its known influence in dispelling local congestion, is, when judiciously used, of great advantage; so also are minute amounts of opium, both locally and internally; small, frequently-repeated doses of carbonate of ammonia are highly recommended. If the secretion be excessive and long continued, astringents are advised; but they are, in my opinion, of questionable value. But these are not tools to be taken rashly into untrained hands. Measures looking to the establishment of free sweating are not always beneficial nor without risk, and had better be avoided, except at the very outset of the trouble.

In the earliest stages, such old-fashioned, time-honored, and honorable measures as a hot mustard foot-bath, hot sleeping-draughts, like strong lemonade or lemonade strengthened with a table-spoonful of whiskey, or Hollands and the like, taken with a view to provoke abundant sweating, are excellent; but they must be taken at the beginning to do the good they are capable of; and it is not to be forgotten that harm may come of imprudent exposure the next morning.

A plain, nutritious diet, the sparing consumption of fluids, attention to ventilation and the temperature, and to the weight and warmth of clothing, are required.

Preventive treatment consists in attention to the

general health, and the *greatest care in avoidance of exposure when fatigued.* An over-sensitive skin may be *hardened* by systematic cold or lukewarm sponging, by regular exercise in the open air, and by long hours of sleep upon a hard bed with light coverings.

Schneider thought that the secretion of catarrh was an effort on the part of Nature to purge the blood of injurious accumulations, the result of high living; and that the abundance of riches brought to its possessor an abundance of phlegm. This view led him to a choice of remedies as unpalatable to those given up to luxurious living as they are useful in building up and maintaining health: "Inasmuch as catarrhs are born of luxury and indolence, therefore their appropriate medicine consists in sobriety, in continence, in bodily exercise, and in tranquillity of mind." *

One of the most remarkable, and not rarely one of the most distressing, diseases of summer is hay asthma. This affection, for which a number of different names has been proposed, — such as hay-fever, rye-catarrh, rose-cold, typical summer-catarrh, catarrhus æstivus, pollen-catarrh, pollen-asthma, — was first fully described, in 1819, by an English physician named Bostock, who

*"Ut ex luxu ac otio nascentur catarrhi, ita horum medicina est in sobrietate, in continentia, in exercitationibus corporis, in mentis tranquillitate." — Quoted by Frænkel, in Ziemssen's Cyclopedia, Vol. IV.

wrote about it from personal experience, being himself a sufferer. Since his day, more and more attention has been given to this ailment, both by physicians and others, and an extensive literature concerning it has grown up, chiefly the work of men who, like Bostock, were subject to its attacks. It now finds a recognized place in the systematic books on medicine. It is a disease remarkable by reason of the comparatively small number of persons whom it attacks, the regularity with which it makes its annual return,—often to the very day or hour,—and the fact that our knowledge of the nature of the cause is very much more exact and definite than in most other diseases. It is often distressing by reason of the extreme intensity of the symptoms, which frequently prevent the sufferer from the discharge of business duties and the enjoyment of social pleasures alike, and in many cases oblige him to remain for some days, or even weeks, a close prisoner in his room. Recovery always takes place.

Hay asthma may be described as a catarrhal affection of the mucous membrane lining the bronchial tubes, the upper air-passages, and that which covers the globe of the eye and lines the eyelids, (conjunctiva,) attended with slight febrile action, and occurring once a year, at the season of the blooming of certain grasses and cereals. The attack lasts a variable length of time, from a few days to six weeks, and is

subject to a daily increase in the intensity of the symptoms usually towards evening. It is at once relieved, in the great majority of cases, by an escape from the exciting cause — the pollen of the plants named.

If the eyes and nasal passages be alone or chiefly affected, the symptoms are those of a more or less pronounced coryza, while if the bronchial tubes be implicated, the symptoms are those of asthma. In many cases these two groups are associated, and to the swelling and redness of the eyelids, and excessive secretion of tears, and the most distressing symptoms of cold in the head, are added the difficult respiration, oppression, and general distress of asthma, the whole being reinforced by a slight febrile condition, general *malaise*, and a leaky, chilly, and acutely sensitive skin, as in "cold,"— certainly no very endurable array of ills. In some cases the patient has urgent difficulty in breathing, is obliged to sit bolt-upright, is anxious and extremely restless, with convulsively clinched hands, and a disturbed, pale, or even livid face. But the intensity of the trouble is very variable, not amounting, in some cases, to more than an annoying and persistent cold in the head.

The first attack may occur in early childhood; the period of adolescence and early adult life is most prone to it, and those who escape till middle life are not apt to become the victims of the disease. Men are much more liable to it than women.

The educated classes of society alone suffer from this malady. Doctors are especially liable to it. A curious contrast is afforded by persons living side by side, but a different life. The physician suffers; his coachman, who breathes the same air, or, at all events, a better one, escapes; the clergyman, the officer, the merchant are made wretched some weeks every year, and always anxious by it; whilst the sexton, the private soldier, and the porter have never even heard of hay asthma, and in this respect can well forego the folly of being wise.

All observers agree that the class of persons who suffer least from hay asthma, is that most exposed to its exciting causes, namely, farmers. Whether this be due to their simpler life, or to the fact that a constant exposure renders them less sensitive, is as yet undecided.

Those resident in rural districts are very much less liable than dwellers in cities.

Persons of a strongly marked nervous temperament are more apt to suffer from the affection under consideration than others.

The liability is, in some families, hereditary.

It prevails to some extent in all civilized countries, but is especially prevalent in England and the United States, the Anglo-Saxon races appearing to possess a peculiar susceptibility to the substances which call it forth.

Certain conditions of age, race, sex, dwelling-place, social state, temperament, hereditation, are the predisposing causes, which in combination render a limited number of individuals in any community incapable of resisting influences which are inoperative with the majority, but which in them produce the disease with the greatest certainty and regularity. These influences have been found to be inseparably associated with the summer, from May to September, that is to say, with the time of the blossoming of the grasses and cereals.

Bostock thought that the disease was due to heat; others, that dry heat with intense light; or again, others, that moist heat are the exciting causes of the affection. Dust, also, and the odors of certain plants and flowers, and ozone have been viewed as exciting causes; but the general experience of both medical observers and their patients tends to establish the opinion, that the pollen of certain plants, and that alone, is capable of producing hay asthma in those individuals who are liable to it. The elaborate and painstaking experiments of Dr. Blakley have gone far towards confirming the popular view.*

It is familiar to all that dust, the emanations from powdered ipecach, the scent of certain flowers, and

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* Experimental Researches in the Causes and Nature of Catarrhus Æstivus. 1873.

volatile principles emitted from the skins of certain animals will produce marked irritation of the mucous membrane of the nose and lungs of some persons; but this is not the disease in question. This may and does happen at all seasons of the year; it is transient in character, vanishing with the cause; it lacks, finally, the intensity, the complexity, the daily revolution and variation of the symptoms produced by the true malady.

Dr. Blakley found that pollen — he experimented with that of seventy-four kinds of plants, among which were many grasses — produced the symptoms of the disease both in the fresh and dried states. He conducted a series of experiments with a view to establish the relative quantity of pollen floating in the air in different localities, at varying altitudes, and the relation between the urgency of the symptoms and the amount of pollen. These observations were extended over two years, 1866 and 1867. The difference in quantity was very great in the two years. In cities, the proportion was less than in the country. The greatest quantity was found to coincide with the highest temperature of the season; the higher strata of air — the experiments were carried in to a height of 1500 feet above the sea level — were found to contain a relatively greater amount, a fact contrary to what would have been supposed. It was observed, also, that a rain-fall and rainy weather diminished the quantity,

which was also influenced by the force and direction of the winds.

The experimenter found that the intensity of the symptoms, in his own case, varied in conformity with the above observations, being greatest when the amount of pollen floating in the air was greatest, aggravated on going from the city to the country, mitigated upon the fall of rain, observations constantly made by sufferers from this affection. It is also in accordance with this observation that patients suffer less while quiet than when in motion, and indoors than in the open air.

The pollen grain, which is of microscopic size, consists of a membranous sac with granular contents. The bursting of the membrane allows the granules to become free; they then exhibit an active movement, which continues for some time. The bursting of the membrane is quickly brought about by the absorption of water or other fluids. In addition to the mechanical effects of these granules in motion upon the surface of the mucous membrane, it has been suggested that some not yet investigated chemical action may take place.

The symptoms above described are due to an inflammation of the mucous membrane, with the accumulation of inflammatory products in the tissues forming it, giving rise to thickening and altered secretion.

The duration of the attack is variable, but may be

set down as about six weeks. It may gradually subside or may cease as abruptly as it began.

In the neighborhood of Philadelphia, and other districts on the Atlantic seaboard familiar to the writer, the pollen of the maize or Indian corn appears to be active in producing hay asthma. Many persons experience the first symptoms of its annual visitation about the middle of August, about the time the ordinary field-corn comes fully into tassel.

A gentleman, who suffered from the disease in a very severe form, related to the writer that on one occasion, while at Cresson, when his sufferings were usually less intense, he undertook an excursion by carriage to visit some place of interest distant about ten miles. It was towards the end of August, and the road lay, for the greater part of the distance, between corn-fields then in full bloom. His sufferings became greater than he had ever before felt, and at the end of his journey he was scarcely able to speak.

Persons who have once manifested the liability to hay asthma, and have once had the disease, are apt to suffer from it with each returning year, unless they seek refuge in flight from cultivated regions. As yet the most diligent search on all sides has failed to bring to light any sure preventive treatment for those who are exposed to the exciting causes. The pollen is capable of being transported long distances and to considerable heights, as was shown by the experiments

of Dr. Blakley; but it is evident that it fails to reach great altitudes; for those escape it who take refuge in such high regions as Deer Park, Kane, several spots in mountainous New England, notably Jefferson, and at Paul Smith's in the Adirondacks. It is probable that dense masses of foliage, as that of forests, arrest the progress of the pollen wafted in the air, as they arrest the course of that obscure entity to which the name of malaria is given. Those who go to sea of course escape, and some islands afford refuge, notably Fire Island, off the coast of Long Island, and, on the Jersey coast, Beach Haven. Many persons are moderately comfortable at the sea-shore whilst the sea-breeze blows, but their sufferings return in full intensity upon the setting in of a breeze from the land.

CHAPTER VII.

THE SKIN IN SUMMER, AND ITS MALADIES.

THE skin is not only the covering of the body and a protection to the parts beneath, but it also serves several important physiological purposes.

Richly endowed with nerves, it serves as a great organ of touch, by means of which the nature of things in direct physical relation with our bodies is brought to our knowledge.

The sweat-glands and the function of perspiration, which is vicarious with that of the kidneys to a certain extent, place the skin in the excretory system of the organism, of which in truth it forms an important element.

The skin is exceedingly rich in blood-vessels. These, under the influence of external impressions, and of the action of that portion of the nervous system, the sympathetic, which presides over the circulation of the blood in the various organs, are capable of rapid and great changes of calibre. It thus has an office of no little importance in relation to the circulation of the blood, and, as it constitutes the "heat-

losing" area of the body, in contradistinction to those internal organs in which rapid oxidation takes place, and which together make up the "heat-producing" area, it has much to do with animal heat and the maintenance of a constant temperature.

The skin is endowed with the function of absorption. Substances applied to its surface produce local and constitutional effects. Absorption takes place with the greatest readiness in those parts where the outer or horny layer of the epidermis is least developed.

It does not fall within the scope of this book to describe in detail the anatomy of the skin, nor to discuss skin diseases at length from any point of view; but there are a number of skin affections so common in summer, and so directly due to influences acting only in summer, that their brief consideration is not out of place here. For more general information, the book of Dr. Bulkley* may be referred to.

It will not be without use, however, to remind the reader that the skin is, as has been seen, a complex organization. It is made up of several parts, of which some are essential, and present everywhere; others are of the nature of appendages, and are to be found only in certain parts.

The essential layers are (1) the epidermis, or *scarf-*

* The Skin in Health and Disease. By L. D. Bulkley, M. D. American Health Primers.

skin, a cellular layer, which is divided into an outer or horny part, and an inner or mucous layer.

The epidermis is of variable thickness, being thinnest on the lips and elsewhere in the face, and thickest on the palms of the hands and the soles of the feet.

(2.) The corium, or *cutis vera*, or true skin, a firm, membranous structure, composed chiefly of connective tissue with elastic fibres, is the most important element of the integument. It consists of an upper or papillary and a lower or reticular layer.

The papillary layer consists of a dense tissue, beset with minute, teat-like projections called papillæ. These are of two kinds, those containing blood-vessels and those containing nerves.

The reticular layer forms the bulk of the corium. It consists of an interlacement of connective tissue, looser in texture than the papillary layer, from which it is not separated by any distinct line.

(3.) The subcutaneous connective tissue is composed of bands of ordinary connective tissue crossing one another so as to form a coarse network. It contains, as a rule, an abundance of fat; but in certain regions, as the eyelids and the ears, it is without fat. When fat is plentiful, it is called adipose tissue. The contour of the body is to some extent determined by the quantity of fat contained in the meshes of this deepest layer of the skin. It merges into the corium

above, and is connected with the *deep fascia*, or the proper coverings of the muscles below. Good-sized blood-vessels ramify in it, giving off twigs to the overlying corium.

The appendages of the skin are sebaceous or oil-glands, sweat-glands, hairs, and nails.

The glands, hairs, muscular fibres of the skin, together with the lymphatic vessels, nerves, and blood-vessels, are contained in the corium, along with some fat.

The outer or horny layer of the epidermis is constantly shed in the form of fine scales. This loss is compensated by a constant renewal from beneath.

The secretion of the sebaceous glands is rich in fat, and serves as a natural lubricant for the skin and hair. Its amount and character vary in different individuals and different conditions of health. Excess in production constitutes a troublesome disease.

The perspiration contains products of tissue-waste, fine fat cells, and granular matter from the walls of the gland-tubes.

Cold applied to the surface causes the blood-vessels of the skin to contract, and thus diminishes the quantity of blood near the surface by compelling it to the internal organs; on the other hand, warmth, by causing the little arteries of the corium to dilate, invites the blood to the surface, and causes a freer blood-supply and more active circulation in the skin.

A freer blood-supply and more active circulation, within the limits of health, are followed by increased activity of the physiological processes of the part; hence, in summer, the warmth of the atmosphere, acting upon the circulation of the skin, intensifies its natural processes; a more rapid growth and falling off of the outer surface takes place, a more abundant secretion of *sebum*, the product of the sebaceous glands, a vastly more abundant and continuous sweating. At the same time rapid evaporation removes the watery portions of these secretions, thus lowering the temperature of the surface and of the blood near it, and maintaining the normal temperature of the whole mass of the blood. But the solid, non-volatile portions are left upon the surface. Epithelial scales, tallowy sebum, the cellular and crystallizable elements of the sweat, rapidly produced, tend to accumulate upon the surface of the body, unless as rapidly and carefully removed.

Systematic washing is at every season necessary to high health and decent living. It is much more necessary in summer than in other seasons, as the activity of the skin is greater at that time. The daily bath on rising, whether it be by sponging or the immersion of the whole body, is not alone useful in removing the accumulations of secretion and other foreign substances from the surface, in a word, in *cleansing* the skin, but also, along with the necessary

friction of towelling, it acts as a general tonic to the circulation and the nervous system. "Wash and be clean," may with truth be broadened to "wash and be well." Those only are ignorant of the grateful, refreshing, tonic influence of a quick, cool bath on getting out of bed, who have not made it a daily habit.

I have used the expression "systematic bathing" advisedly. Excessive bathing, either in frequency or in undue length of time spent in the bath, is hurtful. Especially is this true if strong alkaline soaps be freely employed. The outer layer of the epidermis is too rapidly removed, and the oily secretion of the skin, its natural lubricant, reduced below the line of health. The skin is thus rendered harsh and irritable, and actual disease may result.

From five to fifteen minutes is ample time for the daily bath. If bathing be too frequent, or the bath too long, the constitutional effects cease to be tonic, and become depressant.

It is needless to urge the bad taste, uselessness, and danger of the so-called cosmetics, whether they be red or white.

The maladies to which the skin is most liable in summer are:

I. Those produced by the direct action of heat and light —

Sunburn.

Freckles.
Prickly heat.
Chafing.

II. Those due to other agencies chiefly acting in summer,

a. Consequent upon derangements of the stomach and bowels —

Simple erythema.
Roseola, or rose-rash.
Eczema.
Urticaria, or nettle-rash.

b. Insect-bites and the like.

c. Those produced by poisonous plants.

The more active circulation of the skin in summer renders it especially prone to inflammatory troubles upon exposure to the action of irritants. Almost all the diseases that we are about to consider are essentially of the nature of inflammations, and they are, for the most part, acute in character. The exciting causes may be divided into two classes — external, or those acting from without, as intense sunshine, in producing inflammation of the skin exposed to it; or internal or constitutional, as is seen in the action of certain articles of diet in producing nettle-rash.

With very few exceptions, they are attended with

redness of the surface, varying from the mere blush of tissues suffused with an excessive flow of blood in the vessels (hyperæmia) to an intense, angry lividity; with pain of an itching, smarting, or burning character; with greatly increased heat of the surface, both to the sufferer and to the hand of the observer; and with swelling, which is due to the formation of the products of inflammation, and their accumulation in the tissues themselves or beneath the epidermis. This swelling may be in minute points scattered over the surface (papules), or it may be diffuse, and extend over considerable areas (inflammatory œdema), or it may form collections of watery fluid (serum) beneath the outer layers of the skin. These, when small, are called vesicles; when larger, blebs or blisters; or there may be matter (pus), forming pustules or small abscesses. In extreme cases there may be destructive inflammation, terminating in gangrene.

As the inflammatory process subsides, the epidermis dries up (dessicates), and is shed either in the form of small scales or larger strips (desquamation). The new surface is soft and smooth by reason of the delicate nature of the cells which form it (epithelium), and of a brighter hue than normal; but it soon regains the color and texture of the surrounding integument.

Sunburn (*Dermatitis Calorica*).—Heat and cold alike, when sufficiently intense, produce inflammation of the skin. The direct rays of the sun, in which we

have the combined action of high heat and intense light, speedily bring about that group of changes in the skin of persons unaccustomed to such exposure which we call sunburn. There is redness, varying from a slight blush to an intense red or even purple. If the exposure be not too great, the redness gradually subsides, the smarting which attended it ceases, and nothing is left but a moderate deepening of the color of the surface. If the exposure be continued from week to week, the skin becomes accustomed to the sun's rays, inflammatory symptoms are no longer excited, but the color is deepened (pigmentation) until the skin is bronzed, as is seen in sailors, and soldiers after a summer campaign, or in pale-faced professional men after a season of camping out.

Very great exposure may, however, be followed by troublesome and painful symptoms, in children and others whose skin is delicate. The redness becomes intense, the skin swells, blisters form, the surface may be raw as if burned. The suffering attending this condition is often very great. It is, however, of short duration, and the malady tends to spontaneous recovery upon the avoidance of the cause.

Preventive treatment consists in guarding against undue direct exposure, as far as possible, by the use of suitable articles to shield the face, neck, and other parts of the body exposed, and especially by only a brief exposure to the sun for the first few days.

When active inflammation has been excited, the application of soothing lotions is useful. Dilute lead-water is often employed. I have found very rapid relief follow the employment of the carbonate of soda in solution, of the strength of one to two drachms to the pint of water. These preparations are best used in the form of evaporating lotions, by means of masks or compresses of one or two thicknesses of cotton-cloth, which are to be wetted and reapplied as they become warm, for several hours at a time. Zinc ointment also often serves an excellent purpose. As the inflammatory process subsides and the skin begins to dry, bland ointments, such as cosmoline or zinc ointment, may be applied, or a dusting powder, such as rice-flour, starch, or fine rye-meal. Sunburn may occasion eczema in persons predisposed to that affection.

Freckles (*Lentigines*).—This affection usually makes its appearance for the first time in summer, and is always more marked at that season of the year; for this reason, it is supposed to be due to the action of the sun's rays, though the precise mode of its causation is not well understood. Freckles are occasionally met with on portions of the body not exposed to the direct action of sunlight. They are small, round, irregularly shaped, or even angularly outlined, yellowish or yellowish-brown flecks, varying in size from the diameter of a small shot to that of a split pea,

symmetrically disposed, without regularity of distribution on the face, neck, backs of the hands, and the arms, when habitually exposed to the sun's rays. They may appear before the third or fourth year of life, and generally vanish in advanced age. Once having appeared, they last a long time, fading in the winter to reappear in the hot season. Persons of fair complexion are most liable to them, and those having red hair are rarely quite free from freckles. Dark-complexioned people are not, however, always exempt. The discoloration is due to an abnormal deposit of the natural pigment or coloring matter of the skin. They are not attended by any symptoms, and are annoying only by reason of the disfigurement which they cause.

There is no convenient preventive treatment for those in whom there exists a natural predisposition to freckles. An avoidance of the sunshine, which is most probably the exciting cause, would doubtless keep their development within endurable bounds; but the sunshine does more good than the freckles do harm.

Such external remedies are of service in diminishing the intensity of the discoloration as act upon the epidermis, and thus remove the excess of coloring matter. Among these may be mentioned several preparations of mercury, subnitrate of bismuth, and mild alkaline applications, as solutions of carbonate

of soda, or of carbonate of potash. These, variously combined with emulsion of almonds and tincture of benzoin, form agreeable remedies, which should be perseveringly used. Better results are obtained by the prolonged use of mild remedies than by strong applications. Freckles may be rapidly removed by using applications of such strength that their continuous action for some hours gives rise to the formation of minute blisters. The pigment may be carefully removed with the epidermis forming the roof of the blister. The epidermis which reforms over the surface thus treated, will be found to be free from excess of pigment. This process is not to be advised, however, as the benefit is of short duration, and in unskilful hands permanent injury to the skin might result. Various ointments are recommended; they contain stimulating substances, and act by exciting a rapid formation of the superficial elements of the skin and their correspondingly rapid shedding (exfoliation), and should only be used under the observation and advice of a competent medical man.

Prickly Heat (*Miliaria*) is an acute affection of the sweat-glands of an inflammatory nature. It shows itself in numerous minute red points, slightly raised above the surface of the surrounding skin (papules), and in equally minute water-blisters (vesicles) which rise from a reddened inflammatory base. These two forms may exist separately, or, as is more commonly the

case, they coexist. The disorder is not attended with marked constitutional symptoms other than the annoyance and distress resulting from the tingling, pricking and burning which always accompany the eruption. The points are separate, but they may be very close set and usually recur in patches of greater or less extent. Its commonest seat is upon the trunk and neck, but it not infrequently appears upon the face and upper and lower extremities. In the natural creases of the skin it often becomes aggravated, and gives rise to distressing raw surfaces. Its duration may be brief, or crop after crop may appear, and the trouble be thus prolonged during the continuance of hot weather. It occurs at all periods of life, but is most common in infancy and old age. Professor Duhring has observed that the papular form is more apt to show itself in the healthy and well nourished, the vesicular in those who are feeble or in poor health. The outbreak is sudden, without premonitory symptoms, and it frequently disappears and breaks out again abruptly, without discoverable cause.

It is a disease of hot weather, and is produced by heat. Young infants, fleshy persons, and those who take much exercise and perspire excessively, are most liable to it. Flannels and other irritating underwear, and superfluous clothing in general, produce it when the external temperature is high.

The disorder varies greatly in intensity. In tropical

climates it is of greater importance than here, where it is usually an insignificant malady, tending to speedy spontaneous cure upon the removal of the exciting cause — heat. The treatment is a very simple one. Irritating and stimulating applications of every kind are to be carefully avoided; they tend to aggravate the symptoms, and to prolong their duration. Measures to diminish and control perspiration are to be taken; with diminished activity of the sweat-glands, the symptoms tend to disappear with more or less promptness. In ordinary cases, light clothing, rest, a cool apartment, the occasional partial or complete exposure of the affected surface to the air, simple diet, limited quantities of fluid, and a simple purgative, as a rule, work a speedy relief. Cool sponging is to be resorted to, and the surface should be dried without friction with the towel. Lycopodium, or starch-powder, or oxide of zinc mixed with these, may be lightly dusted over the surface. Internal remedies of a cooling or astringent character are sometimes needed. Where debility is present, or the ill-health of the patient has an influence in prolonging the disorder, measures designed to improve the constitutional condition are called for. There need be no fear of evil results from "driving in" the eruption. As long as hot weather continues, relapses are liable to occur.

Chafing (*Erythema intertrigo, Eczema intertrigo*) is one of the most annoying of the simpler skin af-

fections of summer. It chiefly affects fleshy persons and infants, whose skin is soft and tender, and it occurs in those parts of the body where the natural creases of the skin bring two opposing surfaces in contact with each other. The skin becomes red, feels hot and sore; the outer surface is softened and rubs off, leaving abrasions that are often exquisitely tender. An acrid fluid is now poured out, and acts as an irritant in intensifying the inflammatory process, and in extending the inflamed area. Its outbreak is sudden, and under judicious management it frequently goes away as promptly as it came, its whole duration not exceeding a few hours. It may, however, continue for weeks. The term *Erythema intertrigo* is applied to the affection just described. If there be a predisposition on the part of the individual to that special form of inflammation of the skin known as eczema, or in some cases where the chafing is very severe, obstinate, or has been neglected, the simple inflammatory processes may run on into more complex, and *Eczema intertrigo* may supervene.

Chafing may occur at all seasons of the year, and is constantly met with in young infants. It is much more common during hot weather, and is then encountered in persons not liable to it at other times. Heat, friction of opposed surfaces or of garments, an unreasonable quantity of clothing, excessive exercise on the one hand, and too little of it on the other,

are all efficient causes of this affection. The irritating influence of the excretions, want of neatness and attention on the part of the nurse, and derangements of the stomach and bowels, such, for example, as are incident to the period of teething, produce it in young babies. It is thus seen to be dependent either upon causes that are purely local, or upon those of a constitutional character. When the latter exist, any treatment to be successful must be addressed to their removal.

Preventive treatment lies in a careful avoidance of the causes. These are heat, friction, and the action of moist secretions retained in contact with the surface of the skin. It is of great importance that frequent ablutions be performed, and that unscented soap, such as castile, be sparingly used. The skin must be dried with a soft towel, by repeated, light, direct pressure, and without friction. A plethoric gentleman, whose sufferings from this cause in summer had been very great, informed me that he had for several years been quite free from it, in consequence of having formed the habit of washing himself with cold water eight or ten times a day.

The affection once established, measures to dry the surfaces, and keep them asunder, are called for. The readiest of these consist of dusting powders; the best being composed of starch and oxide of zinc combined in varying proportions. Lycopodium powder

or oxide of zinc ointment are also useful. The folds of skin may be separated by strips of lint. The tendency of the disorder thus managed is to a speedy recovery. If it be obstinate, applications of dilute alcoholic washes, or mild astringent lotions, or the black wash — a preparation of calomel in lime-water — may be advantageously resorted to.

It is a good plan to allow babies suffering from chafing to play about upon the bed an hour or so at a time, once or twice a day, without more clothing than their little shirt and a slip, and particularly *sans culottes*.

We now pass on to the brief consideration of some of the skin affections of summer produced by other causes than heat.

Derangements of the digestion not unfrequently give rise to eruptions of various kinds. Children are much more liable to these disorders than adults. One of the most common is

Simple Erythema. — This is a redness or congestion of the skin. We have seen that it characterizes the early stages of other affections produced by irritating causes. It appears as a non-elevated rash, red in color, either diffuse, that is, extending over considerable areas, or even over the greater part of the body uniformly, or else as small, circumscribed spots or patches. It may be due to external causes, but is frequently due to constitutional disturbances, partic-

ularly to acute indigestion in children. It tends rapidly to disappear upon the removal of the cause, and is in itself devoid of importance. These suddenly appearing, diffuse, often scarlet, rashes assume occasionally great importance, from the fact that they sometimes simulate, and are occasionally mistaken for the eruptions of more serious diseases. A child three years old, previously well, was seized during the night with vomiting, and complained of sore throat. Intense fever followed. At daybreak, the whole surface of his body was covered with a bright scarlet eruption. His parents were greatly alarmed, and the fact that they were living in a crowded watering-place hotel added to their consternation, as they were convinced that their youngster had scarlet-fever. The fever rapidly subsided, however, within a few hours, the rash vanished as abruptly as it had appeared, and the next day the boy was as well as ever. It was a case of erythema associated with indigestion from improper diet.

Roseola. — This term is applied to a hyperæmia or congestion of the skin, wide-spread, and of a peculiar arrangement, consisting of small, round or oval spots, the size of a pea or bean. It is nothing more than a form of erythema, and is usually associated with some form of constitutional disease.

Eczema is an inflammatory affection of the skin of a special nature, and attended with the formation of

fluid, which oozes out, then dries, and forms unsightly crusts. It is acute or chronic, sometimes difficult to discriminate from other diseases of the skin, often difficult to treat. It is mentioned here only because it occasionally follows some of the foregoing maladies, if neglected, or if they have occurred in persons constitutionally liable to this form of skin disease.

Nettle-Rash (*Urticaria*). — This disorder is also popularly known as "hives." It is an acute affection, often appearing in the course of a few minutes. Raised patches, called wheals, of various shapes, round or oval, elongated, crescentic, appear abruptly on different parts of the body, no part being exempt from their invasion. They even appear on the scalp. Their arrangement is extremely irregular; their color is usually whitish, or pale at the top and red at the base, which is surrounded by a ring of reddened skin, which shades off gradually into the natural color. To the touch they are sometimes firm. They are often quite evanescent, fading as quickly as they came, and are often seen to disappear and reappear in other regions during the same attack. No alteration of the skin is seen after the wheals have disappeared.

Urticaria is invariably attended with the most annoying stinging and burning of the affected skin. The distress is often almost intolerable. Scratching and rubbing aggravate the symptoms. The duration of the acute form is from a few hours to a day or two,

and is greatly influenced by the removal of the exciting cause.

Certain individuals are much more prone to this affection than others; and external irritants or internal derangements that produce in some persons a slight local inflammation of the skin, or a simple erythema, will in others give rise to nettle-rash. Among the external irritants which not infrequently cause it may be mentioned fleas, bedbugs, mosquitoes, and other insects, the jelly-fish, so common in certain seasons in the waters of our Atlantic coast, and the stinging-nettle, which last gives to the eruption its name.

By far the greater number of cases arise from internal causes; these are chiefly referrible to disturbances of the digestive organs. Indigestion from over-eating, highly-seasoned dishes, and excess in drink, often causes the outbreak. Certain articles of food, many of which are in season in summer, and are esteemed as delicacies, are especially apt to produce this affection. Such are sea-food, crabs, lobsters, clams, oysters, fish; some of the small fruits, as strawberries and raspberries; pork and sausages, and some other articles. These things are eaten with impunity by the vast majority of persons; it is therefore evident that they produce nettle-rash in the minority by reason of some personal peculiarity.

Numerous other agents are efficient causes of the disease, but it would be foreign to the purpose of

this book to enter into the discussion of them. A sudden checking of the perspiration has been, in a few cases that have come under my observation, the only assignable cause. Intense emotion has been also assigned as a cause.

It is obvious that successful treatment will depend upon a prompt recognition of the cause. As a rule, this will be readily discovered. Measures directed to its removal or neutralization must be at once resorted to. Inquiries into the nature of food recently taken should be instituted. It may be necessary, if there is reason to believe that the offending substance still remains in the stomach, to administer an emetic, especially if the attack be severe or the suffering very great. This measure is apt in many cases to be followed by alleviation of the symptoms. A free movement of the bowels should be as promptly as possible brought about, and laxatives employed from time to time during the attack, if it be protracted. For this purpose there is nothing better than magnesia, or the effervescing solution of the citrate of magnesia. The alkaline and aperient, effervescing mineral waters are useful and grateful. There is usually decided acidity of the stomach, which should by no means be overlooked in the management of the case.

Local remedies are very important, and must be used with an energy proportionate to the severity of the symptoms. They are most conveniently applied

in the form of lotions or baths; among the former, vinegar and water, alcohol and water. For this purpose, bathing whiskey or bay rum may be used, soda, a drachm to half a pint of water, and weak solutions of carbolic acid.

The baths most useful are those containing carbonate of sodium or bicarbonate of potassium, of the strength of three ounces to thirty gallons; these substances may be combined with advantage. Bran and starch baths are also useful in allaying the stinging and burning. Acid baths are often grateful, the strength being half an ounce of nitric or sulphuric acid to thirty gallons. The temperature of the bath should be warm enough to be agreeable, and the patient should remain in it not less than fifteen or twenty minutes. The strength of the bath will vary in accordance with the patient's skin. The above directions may be regarded as meeting the requirements of the average case.

Acute nettle-rash is likely to recur from time to time, unless the exciting cause be sedulously avoided.

Insects and other small fry of the woods and waters occasion great inconvenience by the inflammation which they set up in the skin. It has been seen that they not infrequently produce nettle-rash. The sting or bite of most of these creatures produces at the spot a wheal, which in appearance and in the symptoms which attend it closely resembles nettle-rash, differing

in truth only in the fact of its being a local trouble. At the summit of such swellings, the puncture made by the insect may usually be observed. Trifling constitutional disturbances, with a little transient fever, may occasionally coexist, especially in children. This, as a rule, speedily subsides along with the local difficulty. Many persons once inconvenienced by such irritation are free from it for the season, the subsequent attacks of mosquitoes and so on resulting in much less distressing consequences thenceforth. About the eyelids and in persons of feeble health, these insect-wounds occasionally give rise to abscesses, which must be opened and treated in the usual way.

The wheals thus produced are to be treated by lotions of vinegar, alcohol, ammonia and the like. I have found soda solutions of the strength of one or two drachms, as advised for sunburn, steadily mopped on, to be fully as useful as any other remedy.

Ticks are to be removed by pouring upon them a drop of oil. They must never be forcibly removed, lest some part be left on the skin to keep up the trouble. It is important to avoid scratching, and other irritation of the wounds made by insects, as it intensifies the suffering and retards their healing.

Persons camping out in the wilderness are apt to suffer from the attacks of black flies during the early months of the summer. The effect of their bites is similar to that of the mosquito. In the later months

the harvest mite is troublesome in cultivated regions, attacking the legs and feet. The last may to some extent be escaped by using some aromatic oil.

It remains finally to speak of the skin affections produced by contact with or the approach to certain poisonous plants.

The stinging-nettle gives rise to a painful urticaria, which is usually of a very transient character, and requires no treatment other than the avoidance of scratching and rubbing. A lotion of ammonia or of soda, if required, will, as a rule, allay the suffering.

An active inflammation of the skin (*Dermatitis venenata*) is produced in some individuals by contact with certain plants, or even by coming into proximity with them. The poison oak (*Rhus toxicodendron*) and the poison vine (*Rhus radicans*), plants which belong to the same family, and are thought by botanists to be identical, their habit merely being modified by the spot in which they grow, are the most frequent cause of this form of cutaneous poisoning.

The poison vine is a climbing plant, which is found upon the trunks of trees, rocks, and along fences and walls, to which it clings by means of stout, short, rooting fibres. Its leaves are arranged by threes, hence it is often called the three-leaved creeper; they are smooth and shining on both the upper and under surfaces. It frequents such rocky spots and sloping

banks as the dew-berry vine selects, and children are often poisoned while gathering berries.

The characteristics of the poison oak are the same, save that instead of climbing it assumes the form of a shrub from one to three feet in height. It is thought that the difference in form is due to the want of support. It is found in the woods, fields, and along fence-borders, from Canada to Georgia. These plants owe their poisonous qualities to the possession of a highly volatile principle, to which the name of toxicodendric acid has been given. This exists in the juice, and is emitted by the leaves of the growing plant. Its effect upon the skin varies, with the susceptibility of the individual and the concentration of the poison, from a slight erythematous inflammation to an intense erysipelatous eruption, attended with extensive swelling and irritation. If the plants be wet with dew or after a rainfall, the poison is more active. So great is the difference in the susceptibility of different persons, that some may touch, even handle, the plant with impunity, while others suffer severely from remaining a short time merely near it.

The more common rule is that touching the plants occasions a more or less severe inflammation of the skin. The hands are most frequently affected, but the poison is speedily conveyed to other parts of the body, especially the face, and it may appear in a brief time in scattered patches all over the body.

The period intervening between the contact with the plant and the appearance of the trouble, varies from a few hours, as the common rule, to several days, as the exception.

The duration of the malady is from six or seven days to several weeks. It is greatly influenced by the treatment selected, and the way in which it is carried out.

Many remedies are lauded as specifics for this form of inflammation of the skin. At the outset, the employment of alkalies has been thought to be of great service in arresting the development and mitigating the intensity of the process. This treatment is based upon the fact that the volatile poison is an acid. Soothing lotions, mildly astringent in character, are called for. Lead-water, very dilute solutions of carbolic acid, and decoctions of white-oak bark are useful. In the later stages, when the skin begins to dry, and crusts and scabs form, bland ointments, such as axungia (washed lard), zinc ointment, or cosmoline, should be used. During the acute stage, the swelling is often excessive, so that the eyes are closed, and the face unpleasantly disfigured. Complete recovery without complications is the rule.

A more severe affection is sometimes produced by the swamp sumac (*Rhus venenata*). This is a beautiful shrub or small tree, reaching a height of from fifteen to twenty-five feet. It grows in swamps and

low grounds as far south as Carolina. The bark is dark gray, the branches lighter, and the fine twigs of a beautiful red color. It bears a small, round, greenish-white berry.

The poisoning from this plant is more severe and more extensive than that produced by those already described. Sometimes the whole surface is enormously swollen, and the patient quite unable to move. Recovery takes place.

The treatment is that described above. Individual susceptibility to the poison of this plant also varies greatly.

THE END.