PUBLICATIONS

OF THE

AUSTRALIAN

HEALTH SOCIETY

MELBOURNE

FIRST SERIES

1/-

Dr. Mitchell

SANITARY TRACTS

ISSUED BY THE

Australian Health Society,

MELBOURNE.

FIRST SERIES

Nos. 1 to 13,

WITH

"SANITARY ALPHABET" & SIXTH ANNUAL REPORT.

PUBLISHED BY THE SOCIETY AT THE OFFICE, 14 COLLINS STREET WEST, MELBOURNE.

TO BE HAD OF ALL BOOKSELLERS.

1882.

TABLE OF CONTENTS.

Australian Health Society.

HINTS FOR THE PREVENTION

OF

MEASLES AND SCARLET FEVER.

MEASLES AND SCARLATINA have caused a very high mortality in Victoria of late years. The last great outbreaks were in 1874-75, when Measles was the cause of no fewer than 1797 deaths, and in 1875-76, when the deaths from Scarlatina amounted to 3225. Even these figures do not show the total loss of life from these epidemics, as they give only the deaths caused by the two diseases directly, and do not include those resulting from their after effects. Of the two diseases Scarlatina is the more dangerous, though the figures just given are enough to prove that Measles is far from being always a mild complaint.

Rules for the prevention of the one apply, in the main, to the other. Both are very contagious, and spread very much in the same way, though it has not been so clearly shown in the case of Measles, that the poison is contained in the scales from the skin.

The following rules, applying specially to Scarlet Fever, are adapted from a paper by the Health Committee of Glasgow; and with reference to them it need only be added, that the Central Board of Health for this colony has issued regulations making it penal for any person, in attendance on a patient suffering from Measles or Scarlatina, to go into any public place without first making a change of clothes. The importance of the rules about isolation is, therefore, apparent; and to a neglect of these rules the spread of epidemic diseases is generally owing.

Scarlet Fever is a very contagious and a very dangerous disease. A mild case is as dangerous as a severe one, and Scarlet Fever is never so mild that it may not, in the long run, prove dangerous to life, or even fatal.

One case of Scarlet Fever is always derived directly or indirectly from some other. It is, therefore, the duty of all parents or persons who have charge of a case, to remember that they will be responsible for the spread of the disease, and should adopt such precautions as will prevent it. These are all embraced in the words ISOLATION and DISINFECTION.

ISOLATION.

Isolation means the separation of the sick from the neighbourhood of every person not necessary for proper nursing and treatment. This may be effected

BY KEEPING THE PATIENT AT HOME, AND CUTTING OFF ALL COMMUNICATION WITH THE HEALTHY.—This involves, if done perfectly, a great many points—

1. Send the children who are well out of the house; at least keep them out of the sick room.

2. When a choice is possible, select a room large and well ventilated; and if the weather is not hot, have a fire burning. Never choose the kitchen, as there disease cannot be separated.

3. Remove carpets, curtains, haircloth chairs, or sofas, and every unnecessary or absorbent piece of furniture, especially woollen fabrics; iron bedsteads, hair, or still better, straw mattresses, and kitchen chairs—in short, all articles which will not convey contagion, and which can be easily disinfected, are to be preferred.

4. The room must be occupied only by the patient and the person nursing, and never entered by any one unnecessarily. No child belonging to the family should go to school; no person nursing a child in Scarlet Fever should go shopping or visiting. The gown or outer garment should be a washing print, and stuff dresses should not be worn. Women especially should avoid neighbours' houses where Scarlet Fever is, particularly during convalescence. Much mischief is done by parents gossiping in each others' houses, and making sympathetic visits in such circumstances.

5. No teacher of a school should receive a pupil who is known to have had Scarlet Fever recently, or to belong to a family any member of which has Scarlet Fever, until a certificate of freedom from risk of contagion has been presented, signed by a legally qualified medical practitioner.

In order to insure safety, isolation should be maintained at least a month.

DISINFECTION.

The body, and everything about and discharged from the body of a person infected with Scarlet Fever, is infected, and, therefore, capable of imparting the disease to other persons. Disinfection includes all methods by which the infected matter or material can be deprived of infecting power.

Cleanliness—not of a surface sort, but thorough, in all the holes and corners of the house, below the furniture as well as in the middle of the floor; in all the folds of the bedding, as well as

in the coverlet—is the first and essential step towards disinfection. All the dust swept up or rubbed down should be placed in the heart of the fire and so burned; not thrown among the ashes or into dust bins, and so sent to the public ash-pit.

VENTILATION is a part of cleanliness, and is best maintained by leaving the window open at the top two or three inches, and keeping a nice bright fire burning, if the weather is not hot. There is no danger of cold draughts if this be done constantly; but there is danger if now and then, or only when the doctor calls, the window is drawn down and a rush of cold air admitted to the overheated room.

DISINFECTION DURING SICKNESS.—Scarlet Fever patients always cast their skin, and so long as a particle of old skin is visible there is risk of contagion.

The dead skin comes off partly in flakes, but partly also as dust, which flies everywhere and clings to everything. To prevent this, rub the whole surface of the body over with camphorated oil, or any other agreeable or convenient sweet oil or fat. Do so every night and morning, and whenever the patient is able to bear it, give a warm bath, washing the whole body with Carbolic Acid Soap. A succession of such baths, always followed by oiling, until the whole skin is removed, will prevent the infectious dust from flying about, and in the end will disinfect the patient's body.

This oiling and bathing is the most important disinfecting process which can be adopted in Scarlet Fever; but a few more precautions are desirable.

Use separate bits of rag for wiping the poisonous discharge from the mouth and nose, and burn each bit as it is used.

Put Chloride-of-Lime, Burnett's Fluid (a tablespoonful), or Carbolic Acid or Powder, into the vessels used for the discharges, remembering that the spit or discharge from the throat is particularly poisonous.

Prepare a steep in a bucket or tub containing a wineglassful

of clear Carbolic Acid, or a wineglassful and a half of Burnett's Fluid to each gallon of water, or a tablespoonful of Chloride-of-Lime to each bucket of water; bring it to the patient's bedside and put therein all bed and body linen removed from the patient, doing so cautiously, in order not to scatter adhering particles. This should be done once or twice in the twenty-four hours. The linen should remain in the water until washed, and should then be well boiled.

Disinfection after Recovery or Death.—After the last bath when every particle of old skin is away and recovery perfect, a fresh suit of clothes, from the skin out, should be put on by the patient, and also by the nurse; and disinfection of the apartment, by fumigation with burning sulphur, and also of the bedding and other infected articles, should forthwith be carried out.

Mason, Firth & M'Cutcheon, Printers, 51 & 53 Flinders Lane West, Melbourne.

No. 2.] [Third Edition.

Australian Health Society,

MELBOURNE.

Secretary - J. G. Burrows, Stanley-street, Richmond.

PURE AIR AND VENTILATION.

There is, perhaps, in the whole range of Hygiene, no one condition so vitally essential to physical well-being, but regarding which people in general manifest so much ignorance and negligence, as that of Ventilation; or, in other words, the obtaining of a sufficient and constant supply of pure air in their dwellings. A human being may live long on a scanty diet; he may neglect exercise, bathing, and other means of vigorous health, with more or less impunity; but without wholesome air, or *lung food*, he will sicken as surely as the herb without moisture and light.

To fulfil the purpose of respiration, the human chest expands and contracts upwards of 20,000 times in the twenty-four hours. The lungs and skin of a human being, render three and a half cubic feet of air impure every minute, or two hundred and ten every hour; so that the air contained in an unventilated room eight feet by ten and eight feet high is vitiated and rendered unfit for respiration by one person in about three hours.

In a bed-room, 500 cubic feet of space, at least, must be allowed for every adult. Two children may be counted as one adult. An infant twelve months old requires 200 cubic feet. The chamber must also be ventilated, or the air will in a few hours become foul, as already stated. Thus, a room measuring twelve feet by twelve feet by nine feet contains 1,296 feet, and is just large enough for a man, his wife, and one child—leaving forty-six cubic feet for furniture ; for it must be remembered that all the furniture occupies space, and its bulk should therefore be deducted in reckoning the *breathing area* of a room.

Note.—*Measurement of cubic space :* The three dimensions of length, breadth, and height are multiplied into one another.

Almost everywhere one meets with the evidences of popular ignorance, or neglect, of the necessity of pure air to the maintenance of good health. The dwelling, with its *house-smell*, the musky shop, the close office, and the stiffling railway car and omnibus, are the experience of every day. There appears to exist a prejudice against fresh air in houses, and the greater proportion of our dwellings have been built so as to leave their efficient ventilation a matter yet to be accomplished. But what is truly most needed is the enlightenment of our minds and the conviction of out consciences ; for the homely proverb here holds good, that "where there is the will there will be the way."

Satisfied of the great importance of pure air to health and happiness, let us now consider some of those practical measures whereby it may be best secured.

EARLY TO BED, AND EARLY TO RISE, is unquestionably a great means ; and none the less so because social arrangements or fashion may interpose to make the habit unattainable. The pure crisp morning air adds to life, whilst the midnight hour, with its heated atmosphere and artificial light, tends to weaken vitality.

TO LIVE AS MUCH AS POSSIBLE IN THE OPEN AIR, AND TO ASSIMILATE THE AIR OF THE DWELLING TO THAT OUT OF DOORS IN ITS PURITY, should be the aim of every one who values health. We live in houses far too much shut up, especially for such a climate as that of Australia, during two-thirds of the year. One passes along the streets and roads in city and suburb, in the most genial weather—

> "So cool, so calm, so bright ;
> The bridal of the earth and sky"—

seeing only here and there a solitary open window, and in the vast majority of instances opened but a few inches *from the bottom*. In comparison to the injury to our lungs by the deprivation of pure air, what matters a little dust on the furniture ? or why overlay our rooms with superfluous furniture and ornament, giving needless care and trouble ?

THE FANLIGHT above the entrance door of the house should be made to open ; which simple contrivance for assisting ventilation does not exist as yet in one in ten of our dwellings. By this arrangement the passage can be supplied with fresh air, and through it the sitting and bed rooms to some extent in most houses. And in the case where there is a passage, or staircase window, it should be kept open as a rule day and night ; the object being to create air movement, or a constant relay of pure air.

The Fireplace should be kept open always to secure the thorough ventilation of the room : in warm weather, when there is no fire lighted in it, as well as in winter. On the contrary, the chimney is often closed, lest the grate and fire-irons be rusted ; setting *their* value against our lung's welfare—an illustration of the wrong appreciation of the relative importance of things.

The daily airing of the house, through every nook and cornor of it, by open doors and windows, is a matter of great consequence ; but through ignorance or apathy it is too generally neglected.

In our Bedrooms too much care cannot be taken to secure perfect ventilation, since there we spend on an average one-third of our lives. If you can avoid a draft, or strong air-current, it is most beneficial to sleep with your bedroom window open a few inches at top ; and therefore the top sash should *never be fixed.*

> "Of all things the most I would have you beware
> Of breathing the poison of once-breathed air."

It is better as a rule to have no curtains, or valances, about a bed ; and the bedstead should not be placed against a wall, but well out from the walls, so as to admit of air circulation, as well as to avoid possible dampness. Do not keep in your bedroom an excess of furniture, lumber, portmanteaus, trunks, and boots ; which monopolise breathing space, and serve to vitiate the air by their emanations. The carpet should not be tacked down, so that it can be readily and frequently removed and beaten : a strip alongside the bed is all that is required. No slops, soiled linen, or impurity of any kind, should be permitted to remain over night : the air of the bedroom cannot be too sweet, and should be kept absolutely free from any foulness. The bedding—both mattresses and bed-clothes —should daily be thoroughly aired and exposed to the sun-shine, which ought to be allowed free access to the apartment.

Drapery and Curtain hangings, of one sort or other, are in far too prevalent use—both in our sitting and sleeping apartments. From a sanitary point of view they are to be decidedly condemned ; and the money usually laid out on them might be expended to better purpose in other directions of the household contributing to health and comfort, and not mere ostentation. They obstruct the air movement, harbour dust and vermin, and prevent the ingress of light and sunshine so necessary to health and good spirits. Venetian blinds are sufficient for every purpose of shade and gradation of light, besides affording a free passage to the air, and a means of regulating its supply and direction. A blind should be so hung that when a window is open from the top

the passage for the air shall not be obstructed : this can be contrived by fixing the blind or its roller a few inches below the top of the window frame.

As to Public Conveyances, much still remains to be accomplished for the effectual and constant ventilation of railway carriages, omnibuses, and ship's cabins : the desideratum being to make this the normal state, with which the passenger could not interfere. Meanwhile, for health's sake, it is necessary to keep some of the windows always, open more or less, according to the state of the weather.

The proper airing of our Churches before service—shut up as many of them are for days together, and of our Theatres and Public Halls before assemblages are held in them, should be systematically attended to, in order to disperse the foul air which always collects in closed buildings. And so with regard to Government offices, those of public companies and business establishments, factories, workshops, stores, and shops ; all employers of labour are morally bound to study the physical well-being of their employees in such an essential to health as the adequate provision of pure and abundant ventilation. The confined air in shops, warehouses, and other places of business, closed nightly and throughout Sunday almost air-tight, cannot but be highly injurious to persons inhaling it. Happily, employers have it now in their power to do away with this source of lung-poison, by adopting the new system of shutters made of metal rods in frames, whereby thorough ventilation, as well as security, can be ensured over night.

Such are some of the instances in our every day life where improvement and reform are needed, and the foregoing are a few homely and practical suggestions on the subject of Ventilation, having for their object to arouse attention to *the worth of fresh air*. It is good for all mankind—young and old, healthy and invalid ; the one good thing of which we cannot have too much. The best of tonics ; a sure febrifuge ; and the sworn foe to consumption. How necessary, then, it is that the elements of Sanitary Science should be taught in every school throughout the land. The knowledge of the air we breathe, and the value of its purity of health and happiness, should be instilled into the mind of every child ; and so in the child the habit of a love for pure air will be confirmed.

Ventilation is a most essential part of cleanliness, which is next to Godliness—or rather is physical godliness ; and every effort made to ameliorate the physical conditions of Society must infallibly tend to promote its moral welfare, since the Divine order is—"first that which is natural, and afterward that which is spiritual."

Burrows & Co., Printers, Bookbinders, &c., Sandhurst.

No. 3. [FEBRUARY, 1876.

Australian Health Society,

MELBOURNE.

RULES

FOR THE

PREVENTION of TYPHOID FEVER

"Prevention is better than cure."

[EIGHTH THOUSAND. FEB., 1880.]

Melbourne:

H. CORDELL, PRINTER, 18, LITTLE COLLINS STREET WEST.

COUNCIL FOR THE YEAR 1879-80.

President:

THE HON. JAMES SERVICE, M.L.A.

Vice-Presidents:

MRS. JOHN WEBSTER. | JAS. JAMIESON, M.D.

Honorary Secretary:

MRS. G. W. SELBY, 14, Avoca Street, South Yarra.

Honorary Treasurer:

WILLIAM CRELLIN, Waterloo Street, St. Kilda.

Corresponding Member:

JOHN DAY, M.D., Geelong.

MRS. DUERDIN.	DR. BALLS-HEADLEY.	JAMES GILL.
MISS ISABELLA NIVEN.	LLOYD TAYLER.	F. J. GLADMAN.
MRS. WILKINSON.	A. SUTHERLAND, M.A.	J. S. GREIG.
HON. R. RAMSAY, M.L.A.	THOMAS HARLIN, M.A.	R. W. E. MACIVOR, A.I.C.
REV. CHAS. STRONG.	THOS. BRODRIBB, M.A.	J. H. HAYDON.

Secretary:

J. G. BURROWS, Stanley Street, Richmond.

Objects of the Society.

1. To create an educated public opinion with regard to sanitary matters in general, by the aid of the Platform, the Press, and other suitable means.

2. To induce and assist people by personal influence, example, and encouragement, to live in accordance with recognised laws whereby health is maintained and disease prevented.

3. To seek the removal of all noxious influences deleterious to the public health, and to influence and facilitate legislation in that direction.

Members are requested to ensure for the Tracts of the Australian Health Society the widest circulation possible

Copies of this Tract may be obtained on application to the Hon. Secretary.

SUBSCRIPTIONS RECEIVED BY ANY OF THE ABOVE OFFICERS.

The Council will gladly receive Suggestions on any Subject connected with the Objects of the Society.

RULES

For Preventing the Origin and Checking the Spread

OF

TYPHOID FEVER.

THE fever known to medical men chiefly by the name of TYPHOID is commonly known by various other names, such as *Gastric, Enteric, Nervous, Low, Colonial,* &c.

TYPHOID FEVER, though never absent from the Australian Colonies, is most prevalent in the autumn months; and attacks chiefly persons under thirty years of age. According to the Victorian Year Book for 1874, there have been in Victoria, on an average for twenty-one and a half years ending on that date, 405 deaths annually from Typhoid Fever. But as every death represents ten cases of illness, the total number of cases every year would be 4,050.

Of the two sets of rules which follow, the first for preventing the *origin* of Typhoid Fever is from the work of Dr. Murchison; whilst the second for preventing its *spread* is from the work of Dr. Budd. The two sets, which entirely harmonise, contain, it is believed, the most approved practical means to be adopted for the prevention of the origin not only of Typhoid Fever but also of Scarlet Fever and others.

DR. MURCHISON'S RULES

FOR PREVENTING

THE ORIGIN OF TYPHOID FEVER.

Typhoid Fever would be a rare disease if we could prevent the products of fæcal fermentation entering our houses and polluting our drinking water. The chief rules to be attended to are these:—

1. The cisterns and water-butts in every dwelling ought to be scrupulously cleaned from time to time, and care must be taken that the waste-pipe of the cistern does not pass down directly into a drain and thus ventilate the drain into the cistern. When drinking-water is derived from surface wells, running streams, or water holes, there must be no cesspool, drain, or other nuisance in the vicinity, from which organic impurities may percolate through the soil into the water. From whatever source derived drinking water should always be filtered. Boiling is the best process of any.

2. Care must be taken to keep all house drains free from leakage and obstruction, and to have all water-closets, sinks, and other openings into them properly trapped. It must be remembered that the trapping may be perfect, and yet effluvia may escape from the drains, if the supply of water be deficient, or if the drain beyond the trap be not thoroughly ventilated. The water pipes of baths, basins, and sinks ought therefore to be disconnected from the main drain as well as trapped; while the drain pipes of all closets before entering the main drain should be ventilated and deodorised. When bad smells escape from drains or sinks, chemical disinfectants ought to be used, and thorough house ventilation carried out, until the cause of the escape is investigated

and removed. But it must not be forgotten that the poison of Typhoid Fever, though often accompanied by bad smells, may be itself inodorous. It is a good precaution to flush all house drains, and scrub and cleanse all sinks once or twice a week with abundance of fresh water containing some disinfectant.

3. When the drains or cesspools of a house are opened for repair or cleansing, chemical disinfectants ought to be applied freely to their contents, and thorough ventilation enforced ; and the residents will do well to absent themselves while these operations are going on. From neglect of this rule Typhoid Fever has broken out in consequence of the means resorted to for its prevention.

4. The best chemical agents for preventing fæcal fermentation are Muriatic Acid, Carbolic Acid, Copperas (that is, Sulphate of Iron), Burnett's Fluid, and Chloride of Lime. The liquid Carbolic Acid may be diluted with water in the proportion of 1 to 40, or it may be mixed with sand or sawdust. Copperas is to be used in the proportion of two ounces to the pint of water. Condy's Fluid, Chloralum, and some others remove smells, but nothing more.

5. These preventive measures, and others which will suggest themselves according to circumstances, are especially called for in the autumn and in hot seasons ; and in case of exposure to the nuisances specified of persons below the age of thirty.

RULES FOR PREVENTING

THE

SPREAD OF TYPHOID FEVER.

DRAWN UP FOR POPULAR USE BY DR. W. BUDD.

THE means by which TYPHOID FEVER may be prevented from spreading are very simple and very sure, and the cost next to nothing. They are founded on the discovery that the poison by which the fever spreads is almost entirely contained in the discharges from the bowels.

These discharges infect—(1) The air of the sick-room; (2) The bed and body linen of the patient; (3) The privy and the cesspool, or the drains proceeding from them. From the privy or drain the poison often soaks into the well and infects the drinking water. This last, when it happens, is of all forms of fever-poisoning the most deadly. In these various ways the infection proceeding from the bowel discharges often spreads the fever far and wide. The one great thing to aim at, therefore, is to disinfect these discharges on their very escape from the body, and before they are carried from the sick-room.

This may be done by the use of disinfectants—one of the best is made of green copperas. This substance, which is used by all shoemakers, is very cheap, and may be had everywhere. A pound and a half of green copperas to a gallon of water is the proper strength; a teacupful of this liquid, put into the night-pan every time before it is used by the patient, renders the bowel discharges perfectly harmless. One part of Calvert's Liquid Carbolic Acid in fifty parts of water is equally efficacious.

[Recent experiments by Dr. Dougall, of Glasgow, prove muriatic or hydrochloric acid—commonly called spirits of salt—to be perhaps the best known disinfectant. It is to be used in the following proportions: 1 part of the acid is to be diluted with 50 parts of water, for sprinkling soiled linen; 1 part of acid to 40 of water for flushing drains; 1 part of acid to 20 of water for using in the night-stool.]

To disinfect the bed and body linen and bedding generally, Chloride of Lime, or MacDougall's or Calvert's Powder, is more convenient. These powders should be sprinkled by means of a common dredger on soiled spots on the linen, and about the room to purify the air.

All articles of bed and body linen should be plunged immediately on their removal from the bed into a bucket of water containing a tablespoonful of the Chloride of Lime (or MacDougall's or Calvert's Powder), and should be boiled before being washed. A yard of thin wide gutta-percha placed beneath the blanket, under the breech of the patient, by effectually preventing the discharges from soaking into the bed is a great additional safeguard.

The privy or closet, and all drains communicating with it, should be flushed twice daily with the green copperas liquid, or with Carbolic Acid diluted with water.

In towns and villages where the fever is already prevalent the last rule should be put in force for all houses, whether there be fever in them or not; and for all public drains.

In the event of death the body should be placed as soon as possible in a coffin sprinkled with disinfectants. Early burial is on all accounts desirable.

As the hands of those attending on the sick often become unavoidably soiled by the discharges from the bowel, they should be frequently washed.

The sick-room should be kept well ventilated day and night. The greatest possible care should be taken with regard to the drinking-water, where there is the slightest risk of its having become tainted with fever poison; water should be got from a pure source, or should at least be boiled before being drunk.

Immediately after the illness is over—whether ending in death or in recovery—the dresses worn by the nurses should be washed or destroyed, and the bed and room occupied by the sick should be thoroughly disinfected.

These are golden rules—where they are neglected the fever may become a deadly scourge; where they are strictly carried out, it seldom spreads beyond the person first attacked.

No. 4.] [Sept., 1877.

Australian Health Society,

MELBOURNE.

UNDER THE FLOOR:

BY

T. M. GIRDLESTONE, F.R.C.S.

&c., &c.

A LECTURE

DELIVERED FOR THE AUSTRALIAN HEALTH SOCIETY,
AT THE ATHENÆUM, SEPTEMBER 6, 1876.

The Right Worshipful the Mayor of Melbourne in the Chair.

MELBOURNE:
SANDS & McDOUGALL, PRINTERS, COLLINS STREET WEST.

1877.

OBJECTS OF THE SOCIETY.

1. To create an educated public opinion with regard to sanitary matters in general, by the aid of the Platform, the Press, and other suitable means.

2. To induce and assist people by personal influence, example, and encouragement, to live in accordance with recognised laws whereby health is maintained, and disease prevented.

3. To seek the removal of all noxious influences deleterious to the public health, and to influence and facilitate legislation in that direction.

Members are requested to ensure for the Publications of the Australian Health Society the widest circulation possible.

Copies of this Pamphlet may be obtained on application to the Honorary Secretary.

Subscriptions received by W. CRELLIN, Honorary Treasurer, Waterloo Street, St. Kilda.

UNDER THE FLOOR.

As a good system of drainage forms one of the most important items in the sanitary condition of towns the subject is brought under the consideration of the Australian Health Society from a purely utilitarian point of view, no attempt being made to shirk unpleasant matters of fact. That such a subject as the present cannot be presented exactly in a savoury form is less important because the object of the lecturer is simply to appeal to the common sense of householders and earnest sanitarians who are of course prepared to deal with other substances than rosewater before they can expect to make a clean sweep of all those hidden impurities which generate contagious fevers in our homes and families.

Probably most of those present this evening have already learnt by experience that the application of necessary remedies to our bodies when they are ailing, or to our household establishments when their sanitary arrangements are rather out of order, is not generally an agreeable process. This will account for the fact that the much-dreaded day of reparation is frequently put off until things are becoming no longer bearable, and so it happens that many other unhealthy conditions, out of sight, and often out of mind, are left in abeyance until some frightful calamity brings them to the surface. But the time is fast arriving when the drainage question must force itself upon public attention. In a great many places, just beneath our feet, the ground has become soaked and saturated with water, mixed with decaying organic matter which has been accumulating for years. As must be expected, through the action of natural laws, which most people can read, the harvests we reap are contagious fevers: epidemics are the only crops which rank soil of this description will yield. My duties as Officer of Health to the city of Melbourne have made me well acquainted with these painful conditions, and they are not, let me tell you, by any means confined within our city boundaries; they are metropolitan and suburban, and will affect, or are already affecting, other Australian towns.

It is often said that there is a skeleton in every house, and in most instances it will be found under the floor. The primary cause of many deaths, namely ground wet with water containing organic matter, may be found under a number of floors, a greater number, perhaps, than most persons are aware of; and as this prolific source of disease owes much of its dangerous character to working unseen, or unknown, it would be well for every householder to look for himself, learn the truth, and, *if possible*, have the source of contagion removed. "If possible," because where there is no underground drainage it is not always possible to remove damp from under a house. It is better, however, to know all about it and proclaim the existence of the evil, and it would be wiser to set a mark on the front walls, after the manner of the red cross, with which the citizens once were obliged to brand the plague-contaminated houses in London, rather than the inmates of such infected dwellings should remain in ignorance of the dangers to which they are exposed. For lurking stealthily there lies the enemy, touching the very joists and beams which bear their household gods, constantly exhaling a light, buoyant, and poisonous gas. Little do the members of a family imagine that the warmth of the fire around which they are sitting is drawing into the room a noisome vapour which mingles with the air they are breathing. They are thus day by day unconsciously and unavoidably inhaling a slow poison which deprives them of health, frequently causing a peculiar depression which will be presently described. But first a few words as to how water gets under houses, its character and composition, and the kind of gas it gives off.

Ground Water.

Let us suppose some new houses are to be built, say in Collins-street, the ground is levelled, the natural hard surface is removed, and trenches are cut for the foundations; there being no deep underground drains, the water already lying *perdu* in the soil, together with what comes, more or less, from the surface, finds its way into the trenches, and there settles. When the building is commenced the water is of course bailed out and various contrivances are adopted for excluding it in the future, but in some parts of this, and other streets, it will return, and return again and again as often as it is removed, varying in quantity and quality as the seasons change. In winter it is more plentiful, in summer more putrescent, in some neighbourhoods of course worse than others; as it cannot escape it gradually soaks into the ground, and travels from house to house by a process of filtration, directed by the foundations, from one end of a block to the other, ever replenished by supplies from

some mysterious font, fed by the rain and the washings of the surface of the streets. Frequently the water is so strongly impregnated that its proper designation is "sewage," and any one who desires it can make a few experiments to prove the truth of this without having to wait long for an opportunity. Those however who have seen the bailing out of trenches preparatory to the laying of new foundations, or who may have observed the pools of liquid mud between Elizabeth and Swanston streets, exposed to view when one of the old houses has been pulled down to make way for a more substantial building, are not likely to desire a minute investigation, and it will not tax their faith too much to ask them to believe that the stones, bricks, and mortar, fresh laid in such trenches, must be quickly sopped by this moist demon, which is not to be disguised by the mild appellation of ground-water. Although the cases of sickness it has already caused in the one street may be counted by the score, still there it is, ready to resume its work, to turn each new building into that domestic curse, a damp house, to percolate into the cellar, or into a pit called the well, if there be one, and there concoct "the rankest compound of villainous smell that ever offended nostril." This ground-water, bilge-water, or sewage, is so foul that its contact would pollute the purer water in the gutters, so that the law directs that it must be deodorised before it can be pumped out into the streets. Besides being naturally too strong for the gutters, it is so abundant in some cellars, that pumping has to be resorted to, as many know to their cost, once or oftener in every twenty-four hours, and a great deal of Yan Yean is disposed of in working the exhaust pumps used in the process. The *modus operandi* of these simple contrivances is by a jet of Yan Yean water in a pipe, which is made to rush past the mouth of another pipe coming from the well in the cellar; the quick flowing stream in the one establishes a current in the other, by which the well is discharged into a street gutter, and in many cases the stream has to be left running for several hours, sometimes all night. As the Yan Yean is now supplied for this purpose by meter, and 8d. a thousand gallons is charged by the Government, the whole process is expensive. The owners of some cellars in wet blocks pay as much as £50 a year for water-power used in removing the drainage that is constantly inundating their premises. The cellar of a hotel-keeper in —— street I lately examined, although not many yards distant from several others which require pumping once and more daily, is literally deluged. The landlord said—"During a heavy shower I have to keep pumping continually to keep the water down." This is no doubt quite true, for the locality in question was evidently intended by nature for the formation of a swamp, and if it were not for the numerous cellars the streets overhead would be altogether uninhabitable.

As it is, an iron rod can be passed straight down below the floor for four feet, through soft black mud, showing what is left behind after all the pumping.

Persons who are unfortunate enough to live over or near an underground cellar, or who may happen to pass down Bourke-street during a surreptitious pumping-out performed without any previous deodorisation, are well acquainted with some of the properties of ground water. The gas which assails the nostrils so forcibly is not constantly present, but its place may be occupied by some other unwholesome vapours which do not make themselves known to our sense of smell. These vary according to the composition and surroundings of the parent flood, which is at one time much diluted by rain or Yan Yean, at other times concentrated, stagnant, acted on by heat, putrefaction, or fermentation. While active putrefaction is going on, the gases evolved are too offensive to escape notice, but frequently the unaided senses are deceived. Sight, taste, and smell are not keen enough to detect contagium. Water may be inodorous, clear, bright, and pleasant to the taste, and yet contain much organic material, derived from refuse, suspended or dissolved. Such water, fresh and sparkling from a well, is ripe for mischief, and is too often the focus of an epidemic. It is necessary to know that water readily takes up poisonous organic matter, and then gives off poisonous gas, and it is water charged with these ingredients that we have to contend with in the damp soil and mud of undrained towns, a very different thing from what may, in comparison, be called the clean, damp ground met with in country places only.

Sewer Gas.

The late Professor Parkes in his valuable work on Hygiene brings forward convincing testimony of the poisonous nature of the gas given off by bad water. He states moreover that when there are accumulations of refuse in close courts, small back-yards, &c., the same effects are produced as by the air from London sewers, and many instances of disease caused by heaps of festering garbage are recorded in the Health of Towns Reports. It has been estimated that ordinary sewage gives off from 1 to 1½ cubic inches of gas per gallon per hour, and the amount disengaged is increased by temperature. The gas is a compound of carbo-ammoniacal substances, carbonic acid, nitrogen, light carburetted hydrogen, and sulphuretted hydrogen, the proportions of which are variable; the most common gases are carbonic acid and nitrogen. There are however other products of decomposition which the Professor considers more

important, and probably more dangerous, than the gases. In speaking of houses contaminated with these gases he says:— "That the breathing of such an atmosphere has an immense effect on health, is a matter of such daily observation that, I presume, it will not be denied. Every one must have seen instances in which headache, sickness, and great depression of health were produced. It is impossible to quote the numerous instances which have been recorded."

By some experiments that were made it was found that 8,000 cubic feet of the air of a house into which London sewer air had penetrated destroyed more than twenty times as much potassium permanganate as the same quantity of pure air. And that some animals which were purposely confined in a box, into which the same kind of air was freely admitted, all suffered from illness, described by the experimenter as "a febrile condition resembling the milder forms of continued fever common to the dirty and ill-ventilated homes of the lower classes of the community." But in truth the frequent disasters caused by these gases are not confined to any class. We know that the fatal typhoid fever, that killed the Prince Consort at Windsor in 1861 was a reflux of air from the sewers, which owing to its buoyant character ascended to the Castle. We know that the nature of the emanations here, in Melbourne, are much the same as in the old country; that they are poisonous to adults, but more so to children; when breathed undiluted, or only slightly diluted with atmospheric air, they have proved fatal in a few minutes; only last year two strong men succumbed to their influence on the same night in this town. Parkes relates a case which occurred at Clapham in England, where twenty-three children accidentally exposed to the gases just referred to, but diluted with air, were seized with violent sickness, headache, great prostration, and convulsive twitchings of the muscles, two of whom died in twenty-four hours.

In this country also the same kind of gas is often conveyed into houses, directly, through improperly trapped drain-pipes, or indirectly, through the walls themselves, owing to its inherent power of finding a way through ordinary bricks and mortar. Even when much diluted with air, it is quite capable of giving rise to typhoid fever, or the so-called infantine remittant fever, dysentery, or other complaints. There are now far too many well authenticated instances to admit any doubt of its powers in this direction. In a house so contaminated with bad air fungi grow rapidly, and meat and milk soon taint when exposed to it. The blood of persons who have breathed it for some time becomes impoverished, and if they escape a specific fever, they are nevertheless more likely to sink if attacked by any other kind of

illness than those who have lived in a pure neighbourhood. Perfectly healthy people, after meeting with injuries, more especially wounds, become as susceptible as barometers. A good deal of this was painfully illustrated a few months ago in the large accident ward of the Alfred Hospital, which by the way is thoroughly ventilated. The patients who occupied the three or four beds on the left hand side next a small scullery opening into the ward, and used for washing dishes, were attacked with low fever, or erysipelas, in a way which at first puzzled the medical attendants. The disease evidently originated in this corner. After a good deal of searching about it was found that the air from the hospital drains ascended the down-pipe from the scullery sink, penetrated into the scullery, and thence into the ward. The remedy adopted here was to cut off the communication by making an opening in the drain, or in other words by putting a ventilator into the drain-pipe at a little distance from the ward, so that the gas could no longer be forced up the pipe into the building, but escaped before reaching it. After this alteration the patients progressed more favorably, and were free from erysipelas.

When taken in smaller, but often repeated doses, a little in excess of what most of our citizens are compelled to swallow daily, these gaseous emanations produce some of the following ailments:—Headache, pains in the body and limbs, loss of appetite, nausea, indigestion, bilious disorders, lassitude, a sense of malaise and depression, which latter is relieved for a time by a little alcohol, as a glass of brandy and water.

That depression is so produced, and temporarily relieved, every day, is a matter of no little significance, and one which, I believe, offers the clue to an all-important social problem. The foul air produces the lassitude and depression which in their turn cause the craving for stimulants. It is the want of proper drainage therefore that is answerable for at least some of the drunkenness and consequent brutality which always occurs in the worst built undrained corners of large towns. Strong potations are habitually taken, right or wrong, to fortify the inner man against the evil effects of miasma, and many persons seek relief through the same remedy from the just-mentioned bodily sufferings, at first ill-defined, not easily described, and of the nature of which they are entirely ignorant. I say therefore that the réformers who desire to prevent men from lapsing into the habits of drunkards, must strike here at the root of one great cause; and they will do more to avert social degradation, they will restore more domestic comfort, and promote more health and strength, both physical and moral, than can ever be achieved by the strictest liquor laws or Permissive Bills, or by the milder efforts of the most energetic

members of the Band of Hope. If the most humble homes cannot be made in all respects comfortable, they ought at least to be made bearable; but to bring this about legislation is required against the cause of the disease rather than against the symptoms.

We will for a moment look at the house question from a tenant's point of view. He engages to rent a house for a term —weeks or months—and after taking possession his family sickens. He finds that the walls are damp, that one or more rooms, perhaps all of them, are impregnated by bad smells from the ground, or from the drains, because the latter are badly constructed, or are, through the formation of the premises, compelled to be placed touching the walls of the house, or because surface drains cannot be made to remove subsoil water. The house therefore remains damp, offensive and unhealthy. What is the tenant's remedy? Nothing. He pays for a dwelling and gets a poison trap.

If a merchant imports a cargo of tea, rice, brandy, and other articles of food or drink, which may have become damaged by salt water, or if a dealer offers any of these for sale, or if a butcher prepares diseased meat for human consumption, such articles are quickly seized and destroyed by the local authorities, or the owners may be summoned to the Police Court and fined. The Health Act wisely forbids any person to import, or have in his possession, or prepare for sale for human consumption, any diseased animals or articles of food or drink of a nature deleterious to health or unwholesome. Now if articles of food which have been rendered deleterious by accident, by disease, or by adulteration are prohibited by law, why should houses which are damp and unhealthy from impregnation with the gases of putrefaction be let or sold for human habitations under cognizance of the law? I should like to see unwholesome houses included under the ban by the Health Act with the other deleterious articles, for in reality it is quite as important that we should have pure air to breathe as unadulterated food to eat.

Having just now stated that the emanations from unventilated drains, or from damp contaminated ground, produce typhoid and other fevers, it is necessary to explain that etiologists have not yet quite settled beyond dispute that such diseases can originate *de novo* anywhere. Melbourne mud however is a favorite nidus for the contagium of fevers. It has there somehow or other found a footing and thrives prodigiously, and it may be there in a manner born. Dr. Murchison says certain fevers are born of putrescence, a genesis that I devoutly believe to be something more than probable. There is a good deal of evidence in favour of

this origin, and although there are disputants who fight pertinaciously on the other side they have not yet succeeded in the difficult task of proving a negative, and their adherents are not so numerous as they were a few years ago.

But the plain course which ought to be pursued by householders is not so much affected by this important scientific question as might at first sight be supposed, because there can be no doubt that, if putrescent accumulations are not the *factors*, they are at least the *carriers*, of the poison of contagious fevers. The contagium itself (that is the poison which causes the disease), if it does not originate, lives, and is kept alive, in the stagnant pool, and is carried by gaseous emanations, mingled with the air, into the human body, or finds its way, through accidental percolation, into the drinking water.

It is poor satisfaction to surviving friends to be told by scientists that it had been most conclusively proved that the contagium which caused the last epidemic, and destroyed so many victims, did not arise from the bad drains and overflowing pits of their town. That it had been conveyed or imported from some less enlightened locality, and, having unhappily found its way into the houses by contact, or through the drains, or well-water, why of course it caused the fever of which the recipients died. However it originated, where, or when, the practical teachings of the facts at present known are, that all refuse, stagnant water, and damp in the ground should always be removed from dwellings. The only safe plan is to have the drains, which are necessary, so placed that they carry off all the surface as well as the subsoil water and the house slops. They should be so constructed that nothing stagnates in them nor leaks out of them, and so ventilated that they will not permit any of the gas they contain to enter a house. All this is quite possible with care and attention, in using only sound materials, and in avoiding cheap work; by providing escape upwards for the gas, which is light, through a pipe carried higher than the roof, and for the water, which is heavy, by a drain in the ground, below the foundation. A house on damp ground, with all its doors and windows shut, which is a common phenomenon at night, if not in the day, resembles an inverted tumbler on a wet plate. The vapour, almost bad enough to kill a frog, naturally arising is hived and retained. Everybody knows that common colds and rheumatism are caught by exposure to wet and cold, maybe by sitting out-of-doors on wet ground. When however you are shut up in a damp house full of vapour, with all the apertures closed, other risks are encountered. You are exposed, probably for a long time, to most baneful vapours, and inhale them into the lungs again and again for some eight hours at a

stretch during the night. This involves the risk, not only of taking cold, and getting pains in the limbs, but of absorbing into your blood the contagium of any fever with which the fluid in the ground may be impregnated. Hence the necessity of becoming accustomed to open windows. When the night air is too cold for free admission into bed-rooms, as it sometimes is, lovers of fresh air must be content with that coming from one or more of the passage or hall windows, which should be left open day and night, in all weathers excepting dust storms. Acknowledging that cold air is injurious to many, we must remember that foul air is so to us all; but if we remove the damp from the ground by efficient drains, and allow the sewer gas to escape by ventilating pipes, there would be less necessity for open windows in the middle of winter.

It is well to be acquainted with a ready method for ascertaining whether the ground under your house is dry, so that any person can, when he goes home this evening, without much trouble, make an examination. This ought to be done if the walls are damp, or there is a close mouldy smell about a cupboard, or a room, after being shut up for a few hours. The method to be adopted is, lift a foot or two of a flooring board on the ground floor, should this process be convenient, or bore a hole here and there with an auger large enough to admit the point of the finger; thrust an iron rod as thick as a pen handle (a fencing foil which has no button at the end would answer the purpose well) into the ground; the rod, on being withdrawn, will show whether any water, mud, or damp exists. If there should be anything of this sort, the hole in the floor will be handy for pouring down carbolic acid every few days while the nuisance continues. The hole can be easily filled up with a cork. It may happen that not only damp earth, but water, has accumulated within the four walls without being suspected. A short time ago it was necessary to erect a post near the wall of a large warehouse in Little Collins-street. A hole was dug a few feet deep, when it was suddenly filled up by a rush of water from out the foundations of the building.

Disinfectants can only be referred to briefly in passing, and having just mentioned one of them it may be well to say a few words more respecting the value of agents which prevent putrefaction or destroy contagium. Either Calvert's liquid carbolic acid, No. 5, which is imported and sold by druggists, or the cheaper and equally efficient carbolic oil, made by Forbes and Co., asphalte manufacturers, Yarra-bank, and sold at one shilling a gallon, forms an excellent disinfectant for yards, drains, and damp ground under house floors. For the interior of houses and sick rooms, ozonic ether is perhaps the best and most convenient

artificial disinfectant we possess. It may be used mixed with a little lavender water, in the proportion of one part of the latter to two of the former, in a spray producer; it is pleasant and refreshing, has the advantage of not staining articles of dress, and can be purchased at all druggists. For some purposes chloride of lime and hydrochloric acid are most suitable. However, with perfect sanitation out of doors, and domestic cleanliness indoors, artificial disinfectants would seldom be required except when there was sickness in the house or in the neighborhood.

The rays of the sun are our most powerful natural disinfectant, and as they give life and health, as well as destroy contagium, the custom, which has become common, of excluding light from sick rooms and bedrooms, is a very pernicious one. For a part of the day at least the interior of every room should be exposed to the sun, never forgetting the moral of a wise Italian proverb, "If you exclude the sun you will be compelled to admit the doctor."

Drains.

Thanks to the superiority of some of our arrangements, sewers like those in London are not required here. We simply have to provide for the escape of waste water, from house sinks, and subsoil water, which can be most efficiently accomplished through water-tight pipes placed a few feet below the surface of the streets. The idea which for some time prevailed, that there was not sufficient fall between Melbourne and the Bay to permit of the town being well drained will not now hold good; fortunately it cannot be drained in the old style, by which rivers and bays were destroyed by the sewage. In its present advanced position sanitary engineering has many resources. Greater difficulties than ours have been overcome in other parts of the world, and we may venture to believe that there are no insuperable physical obstructions in the way of the engineer who undertakes the great work of constructing proper drains. That it will be ultimately accomplished, and moreover that it will be very costly, there can be no doubt. Money is not saved, but wasted, by delays. Individuals and corporations are compelled to spend hundreds of pounds every year in various temporary and vexatious expedients —making drains, asphalting floors, pumping cellars, &c., to preserve premises from being completely swamped. These remedies are like so many local patches applied in a constitutional disease, the seat of which they never reach. The only cure for the complaint Melbourne labours under will be comprised in one grand comprehensive scheme for draining the entire metropolis. It is of no use attempting to shut our eyes to the fact that persistent

neglect of the laws of hygiene is paid for by the sacrifice of life and health, and I beg to offer to those persons who prefer to treat the Drainage Question on the *laissez faire* plan the following caution thus rendered by Fielding:—"You provide the noblest materials for building, when a pickaxe and a spade are only necessary; and build houses of five hundred by a hundred feet, forgetting that of six by two." As the town increases in size so do the impurities increase. Such virulent epidemics as we have had lately never occurred here till a few years ago; the two are inseparably related as cause and effect. It is time to make a great effort to rescue the community from diseases that are preventable.

Our present street channels are all very well as far as they can go, their proper function being to conduct only storm-water into the river. That it is impossible to drain Melbourne simply by open surface gutters is shown by the collection of subsoil water, and by the fact that already the street or house drainage in a thousand different places has to be taken in pipes under the floors of dwellings on account of the want of fall in any other direction. Surely underground drains in a street are better than offensive pipes just under your floor. Where space is limited, the surface drains, which always leak more or less, besides overflowing in wet weather, run parallel with and touch the foundation walls. The town having grown up without a plan to regulate the placing of buildings having been made and enforced, and without due regard to the natural dips of the surface, we have been compelled to make drains just below and against the floors of the houses. These drains give off about as much of the noxious gases under our noses as it is possible for drains to do, but, at the same time, they are so superficial that they cannot remove the damp which collects in the foundations, and are therefore more disagreeable and less useful than they might be. A deeper reticulation could be made to remove all the offensive water and if properly ventilated would be no nuisance whatever. The principle is simple enough, it only involves a change, and some outlay of capital, which latter however would be soon covered by the increased value of the houses. Without ventilation underground drains even such as we require, would also discharge injurious gases into streets and houses, but as these gases are lighter than common air there is no difficulty in providing for their exit through shafts erected for the purpose. The drain ventilators now used in England are found to be effectual, and should never be omitted.

The consideration of the ultimate destination of the waste water from such a large town as this is of course important, but would occupy too much time to permit of its being dealt with in

this lecture. Suffice it to say that there are no impossibilities about it, and further, hardly any method of disposing of impure water can be worse than allowing it to settle, or flow, just where it lists. Without stopping to dispute whether the Government, the central, or the local authorities, or the citizens themselves are responsible for this state of things, or whether the honours are fairly divided, we must condemn as bad a system that permits some of the house drainage to remain in the soil, and discharges the rest into the natural lagoons and water courses, polluting the river Yarra, and the swamps on the west and south side of Melbourne, as well as at Sandridge, at Emerald Hill, and in the Albert Park. In the park a feeble attempt has been made to convert an offensive swamp into a *quasi* lake, on which some gentlemen, who certainly cannot be called *fresh-water* sailors, indulge in the pastime of sailing their pleasure boats. But as it is still a receptacle for the refuse which flows down street channels, I would like to warn them that if the drainage cannot be diverted there will soon be more danger in this calm lagoon than in the less treacherous waters of the open Bay.

In conclusion, let me advise you never to live, if you can avoid it, in a house on made ground—that is, where the ground has been artificially raised—for it is soft, and for years will suck up water like a sponge. The long iron rod before referred to could be thrust into it with ease, and the same instrument will be useful in detecting made-up stuff after mere surface appearances are obliterated. Besides being wet, it is likely enough that rubbish has been used, as well as earth, to fill up the inequalities; if so it will ferment and cause illness in the family. Such ground is almost sure to exhale the "germs" of disease, or in other words to contain organic matter which slowly decays and gives off the poison which produces disease. The term "germs of disease" is a convenient figure of speech, but it is not intended to convey thereby that these ideal germs have ever yet been seen. The germ theory itself is non-proven, it is still *sub judice*, and not unlikely before long to be superseded by something more tenable, hence the term cannot be looked on as strictly correct from a scientific point of view.

In reference to some remarks made after the delivery of this lecture in September 1876, to the effect that when living on made ground was *unavoidable* the danger could be obviated by covering the entire surface under the house with impermeable concrete so as to prevent the escape of gases and vapours from

the fermentation beneath, I may state that I think the suggestion is one which ought to be more generally carried out. Pending the advent of the much-desired drainage, if similar impermeable layers could be placed under the floors of all the damp houses, a space being left between the surface of the asphalt and the floor for ventilation, a marked improvement in our death rate would shortly follow.

Sands and McDougall, Printers, Melbourne.

No. 5.] [Second Edition.

Australian Health Society,

MELBOURNE.

Secretary - J. G. Burrows, Stanley-street, Richmond.

RULES

FOR THE

GENERAL MANAGEMENT OF INFANTS.

[*The following Rules, drawn up by a Committee appointed by the Obstetrical Society of London, to consider the causes and prevention of Infant Mortality, and printed in the "Australian Medical Journal," are considered so applicable to the circumstances of this Colony, that the Health Society republish them for the benefit both of the Subscribers and Public.*]

WASHING.

Cleanliness is of vital importance to the health of all children.

Healthy infants should have a warm bath night and morning.

The body should be gently cleansed from head to foot with a sponge or flannel, and then quickly dried with a soft warm towel.

After three or four months the heat of the water should be gradually lowered, but it is not advisable to use quite cold water for young children.

CLOTHING.

The clothing of infants should be light, soft, and warm, and arranged so as not to interfere with the free play of their limbs. All tight bandaging should be avoided.

The common practice of keeping the arms, shoulders, and legs of infants and children bare, is hurtful. Children bear cold less well than grown-up people, and should be warmly clad, with the exception of the head.

VENTILATION.

Pure fresh air is of extreme importance to children. The rooms in which children sleep should be as large and airy as possible, not overcrowed, and the windows should be opened freely and frequently.

SLEEP.

Unless the weather be very cold, or the infant be premature or feeble, it is desirable that it should, from an early period, sleep away from the mother or nurse, in a cradle or cot, care being taken that it is warmly covered.

For the first few months a healthy infant will naturally spend the greater part of its time in sleep.

Up to three years of age a mid-day sleep is beneficial.

In sleeping, as in feeding, regularity is of the utmost importance, and the infant should be put to bed at stated times.

Infants should be put directly into their cot or cradle, and not got into the habit of being nursed to sleep in the arms.

All soothing medicines, cordials, spirits, or sleeping drops, should be strictly avoided, as likely to do much harm. Nothing of this sort should be given except under medical advice.

AIR AND EXERCISE.

In fine weather the child should be taken out at least twice a day, care being taken that it is sufficiently clothed in winter. In warm summer weather, the more it is in the open air the better, taking care to protect the head from the sun.

FEEDING.

Nothing is more important in the bringing up of children than the careful management of their feeding. Carelessness or errors in feeding cause a large proportion of the illnesses and deaths of young children.

Suckling.—Nature provides breast milk as the proper food for an infant, and suckling is by far the best way of feeding it.

Provided the mother or wet-nurse has plenty of milk, and is in good health, an infant requires and should have no other food than the breast-milk until about the sixth month.

The milk itself, for the first few days, acts as a laxative, and no other aperient is necessary.

Should the formation of the milk be delayed, a little cow's milk, diluted with an equal quantity of warm water and slightly sweetened, may be given until the mother is ready to nurse.

The infant should, for the first six weeks, be put to the breast at regular intervals of two hours during the day. During the night it requires to be fed less often. As it gets older it does not require to be fed so frequently.

An infant soon learns regular habits as to feeding. It is a great mistake, and bad both for the mother and child, to give the breast whenever it cries, or to let it be always sucking, particularly at night. This is a common cause of wind, colics and indigestion.

How a Nursing Mother or Wet Nurse should be Fed.—A nursing woman ought to live generously and well, but not grossly. She may take porter or ale, in moderation, with her meals. It is a common mistake for wet nurses to live too well, and this often causes deranged digestion in the child.

Should a nursing woman suffer from dizziness, dimness of sight, much palpitation and shortness of breath, or frequent night-sweats, it is a sign that suckling disagrees with her and she should cease to nurse.

Mixed Feeding, when the Mother has not enough Milk.—When the mother has not enough milk to nourish the child, other food may be given, especially during the night. This should consist of the best milk, with one-third the quantity of warm water added.

This plan of combining breast-feeding with bottle-feeding is better than bringing up the child by hand alone.

Weaning.—The child should not be weaned suddenly, but, by degrees, and, as a rule, it should not be allowed to have the breast after the ninth month.

After the child has cut its front teeth, it should have one or two meals a day of some light food, such as bread and milk or nursery biscuits, and these may be gradually increased until the child is weaned.

When the child is from about seven to ten months old, according to its strength, it may have one meal a day of broth or beef-tea, with crumb of bread soaked in it, or it may have the yoke of an egg lightly boiled.

When it is about a year and a half old, it may have one meal a day of finely-minced meat; but even then milk should form a large proportion of its diet.

The Food of grown-up people bad for Children.—Meat, potatoes, and food such as grown-up people eat, are often given to young infants. This kind of food, and all stimulants, are entirely unsuitable, and are common causes of diarrhœa and other troubles.

Hand-feeding.—If the infant must be brought up by hand the chief rule to remember is, that the food should resemble, as closely as possible, the milk provided for it by nature.

Milk, and milk only, should be used for this purpose. Asses' or goat's milk is best, but cow's milk will, in general, do sufficiently well.

Two-thirds pure and fresh milk, with one-third the quantity of hot water added to it, the whole being slightly sweetened and salted, should be used.

A tea-spoonful of lime water may often, with great advantage, be added to the milk, instead of an equal quantity of warm water.

The milk should be given from a feeding bottle, which should be emptied and rinsed out after every meal, and the tube and cork or teasts, kept in water when not in use. Perfect cleanliness is most important, otherwise the milk may turn sour and disagree with the child.

The child should be fed regularly, just as if it were suckled; and it is a bad habit to give it the bottle merely to keep it quiet.

Milk diet alone should, as a rule, be given until the child begins to cut its teeth, when other food may be gradually commenced, as recommended under the head of "Suckling." When milk is found to disagree, other food should be given under medical advice.

Most of the mortality from hand-feeding arises from the use of arrowroot, corn-flour and other unsuitable kinds of food, which consist of starch alone, contain no proper nourishment, and should not be used as substitutes for milk.

Burrows & Co., Printers, Bookbinders, &c., Bull street, Sandhurst

No. 5.] [March, 1879.

Australian Health Society,

MELBOURNE.

NOTES ON DIET:

An OUTLINE of the PHILOSOPHY and PRACTICE of NUTRITION.

BY

SYDNEY GIBBONS,

F.C.S., F.R.M.S., Etc.

A LECTURE

Delivered for the Australian Health Society, at Melbourne Town Hall, 27th March, 1878.

SECOND EDITION.—WITH ADDITIONS.

Melbourne:
WALKER, MAY & CO., PRINTERS, 9 MACKILLOP STREET.
1879.

COUNCIL FOR THE YEAR 1878-79.

President:

THE HON. JAMES SERVICE, M.L.A.

Vice-Presidents:

MRS. JOHN WEBSTER. | T. M. GIRDLESTONE, F.R.C.S.

Honorary Treasurer:

WILLIAM CRELLIN, Waterloo-street, St. Kilda.

Honorary Secretary:

MRS. G. W. SELBY, 14 Avoca-street, South Yarra.

Corresponding Member:

JOHN DAY, M.D., Geelong.

MRS. DUERDIN.	DR. JAMIESON.	THOMAS HARLIN, M.A.
MISS ISABELLA NIVEN.	DR. EMERY GOULD.	THOMAS BRODRIBB.
MRS. WILKINSON.	REV. CHAS. STRONG.	JAMES GILL.
HON. R. RAMSAY, M.L.A.	LLOYD TAYLER.	SYDNEY GIBBONS, F.C.S.
DR. BALLS-HEADLEY.	A. SUTHERLAND, M.A.	JOHN WEBSTER.

Secretary:

J. G. BURROWS, Stanley-street, Richmond.

OBJECTS OF THE SOCIETY.

1. To create an educated public opinion with regard to sanitary matters in general, by the aid of the Platform, the Press, and other suitable means.

2. To induce and assist people by personal influence, example, and encouragement, to live in accordance with recognized laws, whereby health is maintained and disease prevented.

3. To seek the removal of all noxious influences deleterious to the public health, and to influence and facilitate legislation in that direction.

Members are requested to ensure for the Publications of the Australian Health Society the widest circulation possible.

Copies of this Pamphlet may be obtained on application to the Hon. Secretary.

Subscriptions received by W. CRELLIN, Honorary Treasurer, Waterloo-street, St. Kilda.

*THE COUNCIL WILL GLADLY RECEIVE SUGGESTIONS ON ANY SUBJECT CONNECTED WITH THE OBJECTS OF THE SOCIETY.

NOTES ON DIET.

In order to feed the body successfully—that is, to supply its wants and to maintain it in health and strength—it is necessary to know something of those wants, and of the nature of the food with which they are to be supplied, so that it may be duly selected and taken in the most desirable forms. When some knowledge is possessed on these points, it will often be found that the most acceptable will be the best, and that the educated palate will instinctively care for the wants of the stomach. In other words, Nature will give us abundant help in our endeavors to preserve health and enjoy life, if we only give ourselves the trouble to study her modes of working.

It is not to be expected that a brief discourse like the present can contain a complete account of the properties of all articles of food, or of the conditions belonging to them. General principles only can be laid down, and their applications traced to some of the most familiar and important examples.

First, why do we eat? If this question is fairly answered, half the problem is solved. All machines wear out with working. The body is a very complex machine, or rather a series of machines, so intimately connected one with the other that damage to one affects all the others. Thus, often do we find pain of one sort impairing the efficiency of another. The teeth do not seem to have much to do with the brain, yet they have enough to make study impossible with the toothache; and who feels up to any kind of work when suffering from indigestion? That type of indigestible food, cold pudding, remote as it may seem from all mental concerns, is quite competent to check the flow of ideas, and, by clogging the digestive mechanism, to stop that of thinking.

Thus, then, most of the ailments we suffer are but indications that some of our machines are out of order; and in a vast number of cases this derangement is but neglected or improperly repaired wear and tear. Fatigue is an example of wear that has been allowed to go on too long, and requires not only repair but rest—*i.e.*, cessation of toil till Nature has time to do her share of the repair; and if we do ours improperly—say, in the very common way of overloading the stomach when it is, as a consequence of

the fatigue, less able than usual to do its duty—we introduce derangement of another kind.

The principal wear of the body is *waste*. Every action or thought uses up part of the body—the specially-exerted part more than others, but each in its degree. Those organs most exercised wear faster than the rest, and must have their particular needs cared for in the matter of nourishment ; and if their wants are properly supplied, they repay the care by acquiring increased power of action. But no organs are exempt from this wear, even during inactivity. Simple existence is a kind of exertion—the house we live in is subject to a rent charge.

The principal object of this paper is to inculcate the too little understood doctrine that to keep our organs in a state of efficiency the repair must, and indeed can only, be effected with the *same materials* that are worn away, and in a suitable state and quantity. The two latter conditions have to be borne in mind as well as the former. Nor is there very much difficulty in the matter. If all the conditions are observed, the machine goes well, and we enjoy what is called "general good health ;" if not, the machine goes wrong somewhere, and we ail. Sometimes we pull along without having any illness, but yet wearing out a great deal faster than we ought, and hastening the day when our machine is to stop altogether. This is inevitable. We may trifle with our digestion, or violate any other of Nature's laws, but it will certainly tell upon us sooner or later. Most likely both. A headache after eating or drinking wrongly, or in excess, is not a receipt in full: it is simply a presentation for acceptance. The bill runs on, and will by-and-by fall due, only to be met by a total breaking up, or by a renewal on ruinous terms.

It may be profitable to trace the course in which some of the waste of the body is removed, in order to note how the used-up material may be replaced. By the action of the heart and certain other muscles, the blood, amounting to twelve pounds in an average man, is sent through the body, being distributed to every part by an infinitively fine network of vessels. On its return it brings with it all the matters which have done their duty in the several organs, and which, being now effete, are thus rejected. This waste material being thus reduced into a state for final removal, a large portion is carried to the lungs, to undergo a process similar to burning. But on its way to the lungs to be revived and fitted for another round of duty, the blood receives so much of the food as the stomach and its associated organs have been able to bring into a state fit for assimilation. This is carried in the returned blood to the lungs, and there, by the action of the air, becomes a part of the blood itself, and therefore of the body, and in the next circulation is deposited in the places where it is needed, and in the required forms.

The use of food throughout the whole of life is to renew this

waste of the body, and thus to keep it in a state of health—that is, one in which all its organs are in a fit condition to do their duty.

In youth, food has to perform the additional function of building up the bodily frame. This requires, of course, the same constituent substances, though in rather different proportions; and as the digestive and some other organs (the teeth of childhood, for example) have not attained their maturity, the state in which the food is presented must be somewhat different from that suitable for adults—*i.e.*, simpler and more easily digestible.

As the waste consists of portions of the muscle, bone, fat, etc., it stands to reason that the food with which the repair is to be effected must contain the same substances as those of which they are composed, and, as a general rule, the more nearly it approaches the required condition—that is, the less the system has to do to fit it for its work—the better adapted it will be. Indeed, there are limits beyond which we cannot pass. Thus, we cannot live without lime and phosphorus. We cannot eat lime or phosphorus; but grass takes them from the ground, the ox digests the grass, and we get all that we need in the form of beef. But little change, and that easily effected, is wanted to replace our worn muscle with the already elaborated material of that of the ox, and we, therefore, call it nourishing and digestible. This essential fitness is not always so apparent to the external senses. We see the infant growing—*i.e.*, making bone and flesh, which are not so easily traceable to the milk that is, or ought to be, its sole food. But they are there, nevertheless. The child could not digest flesh food, but the parent can, and elaborates from it the nutritive fluid containing just so much of it as the child can bear. By-and-by simple kinds of food are needed to assist and contribute. Baked flour, for example—by far the best of these adjuncts to infant food—contains very nearly the same ingredients as flesh, though differently arranged. It may be well to remark, while on this subject, that the enormous mortality among infants here is chiefly due to improper food being given. Among the objectionable kinds, the starches are conspicuous—maizena, arrowroot, potato, etc. These are little better than poison to the infant. It is incapable of making the same use of starch that its elders can, and whatever little good such food contains is supplied in a more suitable form by the milk alone.

It is now time to explain that all food may be classed in one of two groups—flesh-forming and heat-giving.

1. Heat-giving foods are the most simple in their composition, and contain the fewest substances, the essential of which are carbon and the elements of water.

These are the fuel which is burnt in the lungs by the help of the air we breathe, for the purpose of keeping up the animal heat. Although devoid of the usual appearances of combustion, the

operation is precisely the same. The heat-giving foods are also fat-forming, and are often so called. When a greater quantity of fuel is supplied than is needed to keep up the proper heat and to burn off the waste, some of it, supposing the excess to be digested and taken into the system, which is not always the case, is stored up in the form of fat for future use. Warmth, then, by reducing the need (or rather expenditure) of heat, is a promoter of fat-forming. The man who, after a hearty meal, doses before a fire, soon becomes plump; but he who, taking abundant exercise, lives much in the air and does not coddle, may even be spare, though a hearty feeder. These foods are best exampled by—first, fat itself, the material ready made, and only needing some changes of form to fit it either for fuel or store fat; and, secondly, starch and sugar, which are the simple forms of fuel, convertible into fat. These foods contribute nothing to the strength of the body, nor to the formation of any essential part of its necessary frame, which can be supported without the special use of either of them. Hence they may be said not to contain nourishment, though in moderate quantity they are useful as assistants to the other foods, and also as vehicles for necessary alimentary substances either added to or naturally associated with them. Vegetables and fruits which contain various salts, acids, etc., are examples of the latter; and the dressing of maizena and rice with eggs, milk, and fruit, illustrate the former group. Nobody can be healthy and strong on a purely vegetable diet—that is, on such aliments as are only obtainable from plants, as starch, woody fibre, and the like; and there are few plants that contain enough flesh-making material to sustain life.

Nations whose staple diet consists of such substances are either puny and weak, or add from other sources the deficient constituents. Livers on potato and meal add milk and fish, but the rice-eating Hindoo has, by his weakness and indolence, excited a vulgar prejudice against the rice, while the true cause is his abstinence from really nourishing food. The nourishment in a potato is next to nothing, but even that nothing is useful in its way, and the starch and cellulose give wonderful help to the enjoyment, as well as mechanical aid to the digestion, of good meat and gravy, on which we could live, though less agreeably, without it.

Cellulose and other inert matter in moderate proportions aid digestion by diluting the food and exposing its particles to the solvent juices, and also by promoting that peculiar movement of the intestines by which the food is kept in continual agitation and gradually impelled forward. So that, although I insist on the selection of pure, wholesome, and suitable foods, I by no means advocate the use of concentrated forms. Indeed, they would be highly objectionable. Such rubbish as the pretended meat extracts, for example, are absolutely objectionable, and often very

injurious. Moreover, the meat extracts carry a falsehood on the face of them. They do not contain the essence of the quantity of meat from which they are made, but only a minute portion, and that not the most valuable.

2. Flesh-forming foods are they which contain all the materials for the formation of the animal frame—flesh, bone, nerve, etc. They are more complex than those last described, and include the rarer, but not less necessary, mineral substances—as lime and phosphorus—required for the bones, and phosphorus in another form so essential to the brain, as to have given rise to the German proverb, "Without phosphorus, no thought."

Fish, which is a highly nutritive and easily-digested variety of flesh-food, has the special merit of containing a large proportion of phosphorus, an element always to be sought for. We all know the extreme restlessness of fish, and phosphorus, by contributing nerve-power, confers activity of body as well as of brain; hence we generally find more of it in active than in sluggish animals.

But let not anyone imagine that nerve power or healthy strength of any kind is to be gained by the use of any filthy nostrums such as the abominable phosphorus pills, the dispensing of which, without medical advice, ought to be an indictable offence, even if only on the ground of their being poisonous, and differing but little from the composition sold for destroying rats; but that is the least of the evils attending their use.

The best examples of flesh-forming foods are ordinary animal food—flesh, and the other matters usually belonging to it—albumen, gelatin, fat, &c., the first of which is sometimes regarded as the type of the group, because it is one of the states through which the flesh (muscle) itself has to pass in the course of its formation, and in the principal form of the new material. The white of an egg is nearly pure albumen and water, and the yolk is albumen, fat, and sulphur. Egg, then, is a complete food; and that it is so is evidenced by the growth of the young chicken—bones, feathers, and all. But there are in the vegetable kingdom some substances so similar to these as to be capable of replacing any of them in a mixture, or even of supplying the place of the whole group on emergency. These are found in certain seeds, chiefly of cereal grasses, and of leguminous (pea) plants. The cereal grasses (corns) contain, besides starch, gluten—a substance similar to albumen and gelatin, and capable of playing their part in the formation of flesh, as well as of making by its changes the starch more digestible. These vary in proportion in the different grains. Wheat is the best fitted to supply the place of animal food; in fact, it is the only food that can be relied on to do. But this observation is limited to the whole meal, such as is, or ought to be, used for brown bread. For the outside of the grain, which is separated in the bran and pollard, contains the greater part of the really nutritive matter—the meat substitutes; and the sifting

of white flour is merely throwing away the chief nourishment of wheat. Besides the gluten so lost, with it go the principles placed with it by Nature to effect the solution of the whole, so that the white flour, in addition to being impoverished, is also rendered less digestible. Nor is this the only loss. In the outer part of the grain is lodged the greater portion of the earthy phosphates so necessary to nutrition.

For bread to be digestible it should be well baked, and made with less water than is usual. The damp, clammy stuff too often sold, because it pays the baker better to sell water than flour, is very indigestible, and more provocative of derangement than of health. Maize meal, not maizena, is another excellent food, and, if eaten as a porridge with milk, leaves little to be desired. Of oatmeal little need be said here, except that, though a capital food in its way, there is not enough meat in it to dispense with farther addition. The other seeds referred to—peas and beans—contain, besides the other constituents, much of what is called casein, from its resemblance to the curd of milk, and on this account they may be classed with the flesh-making foods.

It is to be observed that while the heat foods—fats, starch, &c. —yield nothing worth noting of matter useful in building up the body, those which are best suited to this end have always enough fuel with them to render them independent of special addition. Thus, if potatoes and rice became extinct, there would be no diminution of the real body-making nourishment in the world, while there would be quite enough fuel left to work up that nourishment.

Flesh, then, makes flesh, and is the only aliment that will do it with the same ease and completeness; besides which it is capable of supplying other wants, while the other flesh-forming foods produce the effect by a more circuitous process, and the mere heat-givers—starch, sugar, and fruits—cannot do it at all.

Cheese, an important article of diet, has not yet been mentioned. It is a concentrated flesh-food, somewhat slow of digestion, but a promoter of digestion notwithstanding, in virtue of the property which it possesses of setting up a sort of fermentation. But this property belongs to old and mature cheese, and is most active in that which is decayed and mouldy. The crude new cheeses that form the bulk of our supply have no value as digesters. Besides being a relish, it is a strong food, containing, as it does, the more important parts of milk, which has been shown to be a model food. Like some other things, whose chief use in popular notion is to help bread down, it not only provides what the bread wants, but promotes the assimilation of the bread itself.

Of Alcohol, and its compounds, I need here say but little. The action that most concerns the present object is that it checks and reduces the waste of the system, and that there are occasions on which that is desirable, can hardly be disputed. The question

"How far it is admissible?" approaches the region of controversy. While I do not agree with those who condemn the habitual use of stimulants, it is only right to concede that it is a question of degree, and that, even short of degrading excesses, it may be very possible to overdraw the account too far and too often. But one practice, a too common one, must be condemned without reserve—viz., that of taking drams on an empty stomach. A morning nip is far worse than an evening drunk.

The toping squires of the last century were accustomed to feed well, and to take abundance of open-air exercise of no mean kind. Their three bottles were put on top of a well-earned and copious dinner; thus their potations did them infinitely less harm than much milder and even casual excesses would have done to men of less active habits, which are not productive of appetite. The man who starts in the morning with a "wee hair," goes out with a mere apology for a breakfast, perhaps with none, and requires his "nips" in the forenoon, takes but little real exercise, and is never capable of making—or of digesting, if he could make it—a good hearty meal, such as his system if in proper order would naturally require, is seldom good for much, and never makes old bones. In connection with this subject it may be remarked, as a corollary from the above observations, that incomparably the best "pick-me-up" is a sharp walk—better far than any amount of medicaments. I believe that the best remedial treatment, when such is needed, for drink mania is to impregnate everything about the patient and to saturate his food with his habitual liquor. In this way he is gradually nauseated with it, and spontaneously exhibits a disgust for it. This is far better than mere deprivation.

Tea, coffee, and cocoa owe a great part of their value to a principle which exerts a preservative effect very similar to that of alcohol. The refreshing, and apparently invigorating, effect of a cup of tea, after fatigue, is due to its power of suspending, or at least reducing, the waste of the system, already too heavily taxed, while nature has the opportunity of restoring the loss which the body has sustained by the more easy assimilation of really formative food taken at the same time. Several other plants yield matter having similar properties, and by their aid the inhabitants of the countries in which they flourish are enabled to undergo great privations, and to make exertions that would otherwise be impossible, without far better fare than they can procure. But the excessive or too-frequent use of them is productive of distressing results, and the habit of excess grows upon the consumer until it becomes irresistible. And this leads me to add that excess in tea is nearly, if not quite, as disastrous in its effects as that in spirituous liquors.

Beer is distinguished from other fermented drinks by containing a certain amount of food, which, though small in quantity, is valuable in kind, and in available conditions.

That the light hoppy ales are wholesome, and to a notable extent nutritive, will be disputed by few who have access to information on the subject. That these ales are not only obtainable here, but are those most largely produced, has often been demonstrated by myself and other analysts who have been called on to examine them. And our researches have also shown that the popular ideas of adulteration are entirely at variance with facts. But there is a kind of beer against which I must offer a caution. Avoid religiously a beer that has a distinct sugary taste —with it come evils that may never be shaken off again. A trick has lately sprung up of lowering the quality of a beer (for a cutting trade), and introducing cane-sugar at a late stage of the process. The effect is to leave in the beer a quantity of sugar unchanged by mashing or by fermentation, so as to give a false effect of "body" to the beer. This effect is very different from the sweetness derived from sugar—whether cane or glucose—added at the proper time, and passed through every stage of the brewing process. I do not think that the practice is common; but that it exists, I have had experience. There is a keen competition among brewers; and I have opportunity of observing that, as a general rule, the competition is so far a healthy one—that effort is made to cultivate business by surpassing each other.

Seeing that water forms so large a part of the body, and also of most of our aliments, mention of it must not be omitted. A liberal supply is necessary to health, and even to existence. In fact, deprivation of water is more fatal to life than deprivation of food. A large portion of water—no less than 111 lbs. in an 11 stone man, or rather more than two-thirds of the body—not only forms part of all our organs, but is the solvent part of the blood, and the medium by which are effected the transference of the alimentary matters to their destination, and the removal of the worn-out material. As the consumption and waste of it in this way are large, the supply must be kept up. Accordingly, thirst is an admonition that there is somewhere a deficiency of water. This may be in the blood and tissues, caused by excessive removal by the skin, or in other ways, or it may be local, as is the case when salt food has taken way some of the fluid which the digestive organs need to perform their duty. Besides this, water sometimes supplies material of greater or less utility—lime, earthy matters, and various salts. The principal of these—common salt —demands special notice, not only from its importance and universal occurrence, but also because there is much misapprehension as to its uses. It is present in almost all of our natural foods, those which are most deficient in it being just those which have to undergo the greatest amount of solution and change to fit them for assimilation, and they depend chiefly on other solvents. For example, some of our flesh-foods that are derived from plants, as grain. The operations to which these are subjected are assisted by

a minute proportion of salt; but those which are most highly elaborated have no need of it, as they already contain what they require. Flesh, for example, and blood, which forms its juice, have their proper amount of salt, or they would not be what they are, and what they have soon to be again; they therefore need no addition. Meat is one of the most thirst-exciting of our foods, on account of this. We are also supplied with salt in all natural waters. Salt is, moreover, an important condiment, possessing, as it does, the property, shared with some others, of developing flavours when used in small quantity. The value of these developers ceases when their own flavour overrides that which they are intended to heighten. Thus the fine flavour of a rock-melon is in no way so fully brought out as by pepper, but if enough of the spice is used to make its pungency marked, the flavour of the fruit is overwhelmed. The same effect is noticeable in cured provisions. The richest and most delicate ham, for example, is one that is not too highly cured. The too free use of salt is very undesirable on other grounds. It often makes food less digestible. A marked example is afforded by the case of cucumbers, which, though naturally a light and eminently wholesome food, are often made indigestible by the use of salt, which removes their valuable natural juices, and leaves only the tough, indigestible, woody matter. A fresh, ripe cucumber, merely peeled, may safely be given to young children, who will become very fond of it. A curious illustration of the absurdity of the practice is afforded by the treatment of mushrooms. They are treated with salt, and the effluent brine is carefully preserved for use, while the valueless and uneatable wood is thrown away; while those who salt cucumbers extract and throw away the goodness, eat the wood, and charge the effects of their blunder against the wholesome and grateful esculent.

Fruits generally are light and cooling, and the acids and other principles, including potash salts, which their juices contain, make them desirable articles of diet, especially for children, who need them. But they should be mature, or the desired principles are not formed. The chemical constitution of an unripe fruit is very different from that of a ripe one. It should be noted that the integuments of most fruits are tough and objectionable; most of them, and notably those of drupes, or stone fruit, defy the digestive organs altogether, and it is either to skins or to unripe or damaged fruit that the troubles of children in the fruit season are traceable. Some fruits have a special value. Tomatoes may be mentioned as extremely valuable as regulators and promoters of digestion, besides their delicate flavour and refreshing properties. The ailment called biliousness is simply impossible to one who eats them freely, uncooked and without salt. Oranges can hardly be too much commended, but they will do as much harm as good if the pith is not rejected. In fact, the particular form of woody

tissue known generally as pith is always injurious wherever it is found.

Meals are, on the average, arranged by custom very nearly in accordance with the dictates of science. Thus, in the morning, when the stomach is empty, and the blood impoverished, we take *some* permanent food in the shape of meat or egg; but those foods which are more leisurely digested—farinaceous and leguminous, with milk—always preponderate, and, with the young and delicate, form the entire meal. On the whole, the meal, though supplying sufficient to last for some time, and to repair the loss of the night, is a light one—that is, it is calculated not to make too great demands on the stomach before that organ is itself invigorated. By mid-day, the labourer, and whoever by exertion or exposure has been expending tissue faster than he renewed, will be ready for his solid dinner—*the meal* of the day; while the man of ease or sedentary occupation is content with a light lunch, and defers his chief repast until he is at liberty to digest it at leisure. To him, tea is a superfluity, while the early diner, who, as a rule, also keeps early hours of rest and rising, needs a substantial meal, and calls it his supper. The question of supper, in its original sense, must be settled according to the habits of the individual. Some do not rest without a snack late in the evening, and those whose avocations call on them to keep late hours need it; but it should not be taken immediately before retiring, and the nearer it is to bedtime, the lighter it should be.

Perhaps this will be the best place to discuss some common causes of indigestion, and their possible prevention. Indigestion is simply the title we give to the inconvenience suffered in consequence of retarded or imperfect digestion. If the imperfect digestion is caused by the unfitness of the food taken, the evil may be alleviated, if not removed, by a change of diet, in accordance with the principles here laid down. But the conditions under which food is taken are often at fault. Bolting—that is, rapidity of deglutition without mastication—is a very common cause. Conversation, if cheerful and light, is an excellent remedy, but if otherwise, is only mischievous. Thus, a conversation consisting of strong argument, culminating in decided difference of opinion, approaching asperity, will check the digestion of persons subject to this kind of disorder. Noises, sudden alarms, or vexatious interruptions, or anything that causes annoyance or produces mental irritation, may have a similar effect. If the light, cheerful conversation (which not only produces agreeable impressions, but also spins out the time of a meal, and so increases the opportunities for properly preparing the food before it is finally swallowed) is not available, the next best alternative is silence. But a silent meal is apt to be hurried; there is one thing, and only one thing, to be done, and the knife and fork are apt to work faster than the jaws and tongue, and the work of the latter gets only half done, so that

one part of the food is sent down to the stomach in a state in which it cannot be dealt with there, but remains as a load, and obstructs the progress of the rest till it can get passed on to succeeding organs, while the other portion, although intended for the operations of the stomach, reaches it an unsuitable state, not being sufficiently divided for the gastric juice to attack it freely. An interesting book, not requiring too much mental exertion, will go far to prevent this ; and although I know that my teaching in this particular differs from that of some other hygients, I strongly recommend such reading at meals.

Digestion proceeds more steadily if the first portion of a meal consists chiefly of solids, which are thus exposed, in the first instance, to the action of the undiluted juices that are destined to be their solvents. If much fluid is taken early in a meal, this action is rendered difficult, and proceeds much more slowly and less effectively. Rinsing the mouth and throat just before a meal will often render further drinking unnecessary until near its end.

Exertion too soon after eating is very likely to check digestion, even if nothing has interfered to prevent its commencement. Labour of any kind, physical or mental, should be deferred for a short time after every meal. Children too often have to hurry their dinners, and then hasten off to school. Here we have all three of the evils mentioned, and that many evils flow from it cannot be doubted. Labouring men know better, and always make the act of feeding the first in their dinner hour, that they may have a good lounge to settle the meals before returning to work. Another common cause of indigestion, especially of that form of it occurring among infants, and called wind, is the giving of food before the stomach is ready for it—*i.e.*, while some of the last is still undigested—yet this is often treated by mothers and nurses by the truly homœopathic method of increasing the evil, by giving another dose of the same food. With adults, whose food is variable, the case is different, and it often happens that the ingestion of a small quantity of a lighter food will help off a previous repast, whose digestion has been interrupted ; but to do this it must be very light, and small in quantity, and must be taken very leisurely.

On the selection of foods, a few additional notes are here offered.

For the infant, the mother's milk is the best, and, under favourable circumstances, should, for a time, be the only food. When it needs to be supplemented or replaced, the best substitute, without exception, is wheat flour which has been lightly baked, boiled with milk and water. Most children like it, and nothing can surpass it in digestibility. The mode of preparation has effected in the flour precisely those changes which the infant is unable to produce for itself.

Some of the artificial foods sold are good enough in their way,

but an article made in bulk and kept in stock may lack the element of freshness, and is often unfit for consumption; while the baked flour is never tinned up at all, and may be freshly prepared as wanted. Starch of all kinds (arrowroot, maizena, potato, &c.) is bad for infants. If made with water it is simply poison, and if with milk, the milk is the only nourishment, and the starch is a mischievous encumbrance which the child has no power of digesting, and which would not answer the purpose of food if he could. Much of the mortality of infants is caused by neglect or ignorance of this observation.

In view of the difficulty of obtaining the Baked Flour, and of preparing it in such a way as exactly to convert all the starch into the soluble forms of gum and sugar, I have given to Messrs. Lewis and Whitty a formula for a food which they have undertaken to manufacture strictly in accordance with my directions. I have examined samples of their product, and find it excellent. It has a higher colour than most of the artificial foods sold (indeed, some of that first made was more than usually baked), but this is an indication of the absence of starch, which is invariably white. (I may here notice a remark made by some mothers, on using it for the first time, that it had a laxative effect. The remark almost amounts to an admission that the children had previously been improperly fed. Such easily digested food succeeding one which was the reverse, is pretty sure to produce a little intestine disturbance at first—the fault is that of the old dietary, not of the new, and occurs to adults as well as to children. In such a case the change should not be too sudden.) A very white food is always open to suspicion, for the reason assigned—viz., that starch has always a pure white colour, which the soluble compounds into which it is converted have not.

Some of the foods made here are nothing but broken biscuit ground up. Now, if this could be depended on as being fresh, pure, and of suitable kind, it would be all very well; but, when we reflect that "broken" will often—if not always—mean stale, damaged, and dirty, the use of such a preparation requires a very large faith. Besides this, the makers cannot be expected to discriminate between different kinds of biscuit and to sort them out of a lot of unsold broken, and many of them contain ingredients highly objectionable for the purpose.

Although milk has been frequently spoken of in these notes, the opportunities of obtaining it in town have, until lately, been limited. Milk-and-water, of various degrees of strength, and even with no strength at all to speak of, was abundant; but anything at all approaching a reasonable standard could be obtained from but few dealers. Lately, however, considerable impetus in the right direction has been given to the milk trade by the establishment of a company (projected, I believe, by members of this Society) to supply milk in exactly the state in which it arrives from the farms.

Being retained by the company as its scientific adviser, in the course of my operations I have often found that, when the supply ran short, the farmers were always ready to come to the rescue of the cows, and make up the required quantity. Contrary to the statement of some writers, milk is a fluid of very varying composition; season, pasture, and several other causes will influence its quality. In keeping the balance between the farmers and the company, and between the company and the public, I have to compare frequently the produce of the different farms, and again to test it as distributed to consumers. The latter part of the checking process is the easiest part, and its results have been generally satisfactory. The late season has been a trying one; not only has the supply from the country been reduced, but the wide climatic changes have sometimes made it more than usually difficult to keep the milk good to the last.

Never give animal food of any kind, save milk—not even broth—until the child has teeth. There is a remarkable, and not generally known, connection between animal food in infancy and convulsions. The presence of teeth indicates the capacity for such food; and with the teeth comes saliva, the absence of which prevented the digestion of starch. But solid meat should not be given until the mouth is nearly full. During the cutting of the later teeth, a bone with a little picking on it makes a capital gumstick, which is much relished. Nothing is better for this purpose than the bone from an elder's breakfast chop, and it is always a treat.

When the child is able to take meat regularly, its diet may be varied. The starch foods, dressed with fruit and milk, will now be useful, and good fruit may be liberally given.

Rich cake and coloured sweets should be sedulously avoided, as also all stimulants, or other preparations foreign to the ordinary diet. "Just a taste won't hurt" has killed children by the thousand. Food is all the better for being attractive and palatable; but perfect simplicity is quite compatible with this, and it can hardly be too simple.

Variety is also desirable, and the variation ought not to be a matter of routine. A too close estimation of the quantity supposed to be required, and an insistance on the consumption of that dispensed, are alike objectionable practices, though often followed, especially in large establishments—less, however, now than in days gone by. These may seem small matters, but they are important. These little culinary ethics react indirectly on the health and on the character. Let any reflective person make observations of groups of children so brought up that differences on either of these heads are conspicuous, and the truth of these remarks will be obvious.

The nutritive value of food depends mainly on the kind and state of the alimentary matters it contains, their quantity, and

digestibility ; so that by blending dissimilar kinds, each possessing some quality in which the others are deficient, the palate may be gratified and the body nourished with greater ease.

To these conditions must, of course, be added the state and capacity of the eater, regarded not only in relation to health and disease, but to the varying needs of daily life. The remarks already made on the subject of breakfast afford an instance of this sort of adjustment. It may be added that the full measure of benefit cannot be expected from food, however otherwise excellent, that is in any way repulsive to the consumer. Many a weakly child owes its weakness and impaired digestion to narrow, ill-judged table discipline.

A strong distinction was laid down at starting between foods that build up the body—of which flesh is the type—and those whose chief use is for respiration and heat-giving, without contributing anything essential to the animal frame—typified by starch and fat, and including vegetable foods generally, except those few that most nearly resemble flesh in their composition. It should be remarked that in nature this line of demarcation is not so distinctly apparent as between the examples cited. Most aliments are mixed bodies, but taking their character from some one or two of their constituents. The leanest meat has some fat not apparent to the eye ; and even the potato, with its seventy-five per cent. of water, and the remainder of starch and cellulose, has room for a trace of gluten ; while the cereal grains and the bean tribe resemble, more or less, a mixture of bread and meat.

Man is omnivorous. His teeth and digestive organs plainly show that he was intended to live on animal and vegetable food together, though he is endowed with wonderful powers of adaptation, so that he can, on an emergency, subsist for a time on either alone. But a too great reliance on either kind is prejudicial, and the injurious results are inevitable, as the accommodation is effected by drawing on the store of the body. The risk is least in the case of a diet restricted, or nearly so, to flesh food.

In this case his character and habits will gradually be assimilated to those of the beasts of prey, which do the like, and we get the savage American hunter. A purely vegetable diet, on the other hand, confers the moral and physical weakness of the indolent Hindoo.

Life is a state of change. When the ordinary course of change ceases, a new set of phænomena comes into play, and life is at an end. A derangement of the order or extent of these changes constitutes disease, to obviate which they must be watched and ministered to by supplying the varying wants of the body, when and how they arise.

The present object is to show that the understanding of a few simple principles, and judgment in the application of them, may make this care of the body an easy one.

No. 7.] [Sept., 1878.

Australian Health Society,

MELBOURNE.

"WHAT KILLS OUR BABIES."

BY

CHARLES D. HUNTER,

M.B., et I.F.P.S.C.,

LATE RESIDENT MEDICAL OFFICER OF THE MELBOURNE HOSPITAL FOR SICK CHILDREN.

PRICE, SIXPENCE.

Melbourne:
MASON, FIRTH & M'CUTCHEON, GENERAL PRINTERS,
51 & 53 Flinders Lane West.

MDCCCLXXVIII.

Australian Health Society.

PRESIDENT:

THE HON. JAMES SERVICE, M.L.A.

VICE-PRESIDENTS:

MRS. JOHN WEBSTER.
T. M. GIRDLESTONE, F.R.C.S.

HONORARY TREASURER:

WM. CRELLIN, 6 Market Buildings, Collins Street West.

HONORARY SECRETARY:

MRS. G. W. SELBY, 14 Avoca Street, South Yarra.

OBJECTS OF THE SOCIETY.

1. To create an educated public opinion with regard to sanitary matters in general, by the aid of the Platform, the Press, and other suitable means.

2. To induce and assist people by personal influence, example, and encouragement, to live in accordance with recognised laws whereby health is maintained and disease prevented.

3. To seek the removal of all noxious influences deleterious to the public health, and to influence and facilitate legislation in that direction.

Copies of the following "Health Tracts" may be had gratis upon application to the Hon. Sec.:—No. 1, "Hints for the Prevention of Scarlet Fever;" No. 2, "Pure Air and Ventilation;" No. 3, "Rules for the Prevention of Typhoid Fever;" No. 4, "Under the Floor;" No. 5, "The General Management of Infants;" No. 6, "Notes on Diet."

Subscriptions received by WM. CRELLIN, *Hon. Treasurer, 6 Market Buildings, Collins Street West; or at the Office, 14 Collins Street West.*

WHAT KILLS OUR BABIES.

No. I.

Ten times more babies die in this colony than grown-up people out of an equal number living at the same time. At home more babies die, the cold and wet weather there killing them faster. How is this? It may be safely said that half of these babies should not have died; that half of them have been killed, not intentionally, but by ignorance, carelessness, and too often mistaken kindness. Very few are starved; far more die of over-feeding with wrong food; some of cold, from short-sleeved and low-bodied dresses; whilst others are killed by bad houses, bad air, and bad drains. Mr. Hayter's returns for 1876 show that 241 children under five years died in Collingwood, and only 38 in Latrobe Ward; and taking the population into account, and the census proportion of children in each district, we find that almost twice as many die in Collingwood. This shows what good houses, better drainage (Collingwood being too level), and better air will do. But at the best babies die far too numerously, and there is a reason for it. A young baby will double its weight in a few months; now that of itself means an enormous amount of hard work done by its stomach, bowels, heart, and lungs. Babies breathe faster than grown-up people, their hearts beat twice as quick, their livers are twice as heavy, and altogether the inside machinery of a baby has, in proportion to its weight, to do twice as much work as ours have; no wonder then its bowels so easily get out of order. They have to work at high pressure, and a little thing will cause an explosion. But God has made babies wonderfully strong, and with all these difficulties some babies live in spite of an astonishing amount of wrong-feeding. Were grown-up people to be stuffed with as much rubbish and bad food in proportion to their age as most babies are, I fear quite as many of them would die.

With a delicate baby, the first point is to keep it warm. Inside every living thing there is a kind of burning going on to keep the body warm. This warmth is carried to every part of the body by the blood-vessels, very much as in some churches, halls, and greenhouses, iron pipes full of warm water are used to heat the building. Only our heating pipes are so well distributed that you cannot put the finest

needle into the body without piercing several of them, and letting the warm blood escape.

Now if a baby has its arms, shoulders, and legs bare, it loses a great deal of heat. In warm weather, and if it is healthy, this may not matter much. But if a child is ill or weak it may need all the food it can take just to keep it alive; and if any food is burned to keep its bare arms and legs warm, it may just waste away and die of a kind of slow starvation; for it is part of our food that is burned in us to make the heat, and by keeping a weak baby warm we may bring it up though it may take very little food.

Always, then, cover a delicate child's arms, shoulders, and legs as carefully as its body. Put sleeves into its dresses, or cut the feet off woollen stockings and put the leg pieces on its arms. Allow it to wear no low-bodied dresses; keep long woollen stockings on its legs, and either long petticoats or flannel drawers as well. Many a baby with a low-bodied dress takes a sudden croup, and is dead in a few hours. Very often, if half the flannels on a baby's body were taken off and put on to its legs and arms, it would grow up healthy and strong, instead of giving its parents restless nights and growing up a little misery. I have seen the body far oftener overclothed than underclothed, whilst the arms and legs went naked.

Everybody knows how dangerous it is to be long in a draught or wind in the house, while out of doors the wind never seems to have the same deadly chilling effect. How is this? One cause of the difference is that in the house that part of the body in the draught is getting rapidly cooled, whereas the rest of the body is still and warm. Now there is in our bodies a sort of central telegraph office for distributing the supply of heat to the body, and it has nerves, not unlike telegraph wires, coming from all parts to it, warning it of cold or heat. But when we are out of doors we are breathing fresh air; our blood is thus warmed more rapidly, and as it is sent to the colder parts it easily warms them; but indoors and sitting quietly we breathe very slowly, and the air is never as good as outside. The blood consequently is not so active nor so warm (for to make heat in the body, as in a fireplace or engine furnace, plenty of air is necessary), and those parts of our body in the draught do not get warm so quickly as they are cooled. We all know the bad effects of wet and cold feet—how in men it may cause inflammation of the lungs or rheumatic fever. A draught is just the same cause in a less measure. There is a disturbance in the system which cannot be met, and some of the great internal organs suffer; the lungs, the bowels, the liver, may each or all become congested. Now it is quite plain that a child with bare arms and legs will be upset by a much feebler draught and in a shorter time than a well-clothed baby. Draughts we must have—small houses cannot be ventilated without them—but no one should sit in a draught; that is the height of folly. But we will come back to this subject; meantime the warning is, *clothe every part of a child except its head;* the head is wonderfully arranged

to stand the cold. In proportion to its size the head receives twice or three times as much blood as any other part of the body.

The internal congestion caused by cold is well seen in the purging of young children which so often follows a change of weather from hot to cold. For such an illness the common-sense remedy is of course a good sweat, to call back to the skin the blood and heat which has been driven inwards. Give the child a hot bath—as hot as your elbow or cheek can stand; keep it in a quarter of an hour, then dry it well and wrap it in a blanket warmed before the fire. Put it now in bed for some hours to sweat; a few warm bottles or bricks around it will help. In the morning wash the sweat well off with soap and lukewarm water, and rub it over with warm olive oil.

Babies when ill, as every mother knows, generally get too hot, or feverish as it is called. Often a chill is the beginning of such a state, and in the effort to restore warmth the heating nervous centre before spoken of cannot in its weakened state control its distribution, and excess of heat follows. Mischief we know creates mischief, and such great heat stimulates to greater heat. If the child is weak its feet may even be icy cold when its body and head are burning hot; in all such cases a doctor should be seen as soon as possible; but meanwhile the heat must be kept down. It is much easier checked the first day than if allowed to continue two days; and remember also that this feverishness may often go off in the morning only to return again worse than ever in the afternoon or evening. The latter part of the day, therefore, should be the time of most care and effort to keep down the heat. Nothing is so simple, safe, and certain to meet and check these heats, as bathing the child with lukewarm water. In summer cold water is quite warm enough. Bathe the child often if he is very hot; every half hour is not too often. If the baby is weak and the feet cold, you must first get his feet warm. Put them into hot water (not too hot) for a quarter of an hour, keeping his head wet all the while if it is hot, or if the baby is convulsed. Then dry the legs, wrap them up in a flannel warmed before the fire, and lay the baby in bed. If his body is still hot sponge the front all over with lukewarm water, then dry it and turn him on his face so as to sponge his back also. Repeat this often if the heat continues; no cooling medicine can cool like cold water to the skin; and besides cooling the child it soothes him, and is so pleasant that children often ask for it to be repeated.

If only the head is hot keep warm the rest of the body, and especially the feet. Then wet the head well, and lay over it a single piece of thin wet calico, or tie on a thin cotton cap well wet with water. Do not use a thick cap or more than one fold of wet calico, for thick cloths warm quicker and often heat the head. Try this on your own hand; a single piece of wet cloth cools the skin below by the evaporation of the water, while from a thick piece the water next the skin cannot evaporate, and so it gets warm. Keep the thin cloth constantly wet as long as it heats. When it ceases to heat, and the head gets cold, dry it and bind it up in a dry handkerchief.

At night, if a child is hot and restless, besides bathing it, fasten all round its body a handkerchief wrung out of water and folded like a binder; and to make it safe in case the baby should kick off the bedclothes and expose the damp parts to a chill, fasten over the wet handkerchief a flannel binder. This simple application will often greatly calm a restless baby and give it sound sleep. The handkerchief may be wetted again every two hours if the child is hot or restless.

No. II.

While much of the terrible death-rate among young children is, as we have seen, caused by the foolish habit of leaving their arms, chest, and legs exposed to the cold, far more is due to wrong feeding. Few die from too little food; the wrongs suffered by the poor children are more from too much, too often, or too indigestible food. Many mothers begin as early as possible to give their baby a "bit of everything going," and, if you warn them against it, will tell you what strong children they have reared that way. But, alas! what about those killed that way? If ten times more children die than grown-up people, what killed the nine? If only half our children escape alive through all this stuffing process, can it be called a good way of feeding a baby? No, it cannot. When a baby is born it has no teeth; it has hardly any stomach; its mouth is almost dry as compared with ours, and it has no spittle, and without that it cannot do justice to farinaceous food. There is but one food for infants, and that is milk.

It is surprising how many women think they know better what is good for a baby than its Maker. He sends teeth when its stomach, &c., is fit for solid food, and till its teeth appear no healthy baby should get anything but its mother's milk. Of course there are some cases where that cannot be got, or where it is insufficient; we shall come back presently to such cases, but meantime we have to do with those who can get their mother's milk. Where that is abundant nothing else should be given. What would we think of a mother who forced her baby to walk when it was a month old? We should call her cruel and foolish, if not something worse. What then must we think of those mothers who put into a baby's delicate stomach food that it cannot digest until it is nine or ten months old? We can only call her cruel. It is no real kindness to give such things to a baby; it is really as cruel as giving it a lighted candle because it cries for it. Mothers who thus injure their child deserve the restless nights that baby gives them for their folly; but the poor baby does not deserve such nights. Truly it suffers for the sins of its parents.

Another very bad and foolish habit in this colony is the giving of tea to infants. Tea hinders the digestion of the milk in their delicate

bowels, causes wind and colic, and makes the child nervous and sleepless. The mothers themselves would have better milk, better health, and quieter babies, if they took less tea, especially in the evening, and instead used oatmeal, barley-water, or cocoa and milk.

Another very common fault is that of giving the child the breast whenever it cries. Remember a baby cannot speak, and if it has had too much milk it can only cry ; or if it has the colic, or is thirsty, or annoyed, a little cry is the only way of saying so. But what mother, if an older child complained of having eaten too much, or of feeling sick, would stuff more food into it ? No wonder the poor stuffed babies so often throw up curdled milk ; better they do so than let it corrupt inside of them, causing pain, wind, and purging. When a child has had enough do not give it more milk if it cries. Bad digestion often causes thirst, but the baby cannot ask for a drink ; try it then with a teaspoonful of water—the water will soothe the irritated stomach and assist digestion where more milk would excite vomiting.

With older children the same mistake is also made ; and when a child fails in its appetite the mother, anxious to make it strong, gives it fancy breads, fruit cakes, sponge-cakes, bread and sugar, lollies, &c., whenever it asks for them. Nothing is more certain to still further spoil the appetite and injure the child's stomach than such constant feeding. The poor stomach gets no rest, and how can it do its work well ? It has to reduce the food into a kind of milk, so that it may be changed into blood, and nourish the body. Now, though what goes on in the stomach is a very different process from that of boiling the food, yet the result is somewhat similar ; and it has been found that until all the food is digested the stomach rarely lets any pass out, but keeps churning it about until the whole of it is made into a kind of fine milk. Now, it is easy to see how, if a little piece of bread, or, still worse, of indigestible fruit cake or other rubbish, is put into the stomach between meals, it will spoil the food that is already there, and nearly ready to pass on into the bowels. Just imagine what a mess it would make of a nice boiling of soup if a few raw peas, or potatoes, or vegetables, were put into it just as it was about ready ! If you even allowed the whole to boil on till the last lot was also ready, the vegetables or potatoes first put in would be, as cooks say, " boiled to rags," and the soup spoiled. What cook in boiling potatoes would put a few raw ones into the pot every now and then ? Certainly no one with the least common sense. And yet many, when they try what is tenfold more difficult than to cook well—namely, to make a weak child strong—offend against the first simple rule of success, which is, if any part is too weak for its work, give it plenty of time and rest. A weak stomach requires more time to do its usual work. So when the appetite fails we must either make the time between the food longer instead of shorter, or give no food but what is very easy of digestion. Thus in fever, where the stomach is weak and yet the waste of the body great, we give milk, and give it often. Were we to give bread or meat, and give it as often, we would kill the child ; in fact, we would be starving it, because it could not use

the food we put into it. But milk is so digestible that a little given often is taken up and made into blood.

When, therefore, children of four years and upwards fall into decline, lose their appetite, and waste away, besides seeing a doctor, be most careful of the weak stomach. I have seen many children get quite better without any medicine when the mother became convinced that the stomach needed rest. It is wonderful how soon an appetite comes back when the mother is firm and refuses the child anything between meals except a drink of water, or, if the doctor thinks it necessary, a drink of milk. A small bit of solid food no larger than a cherry will irritate a weak stomach if put into it within three hours after the regular meal. So the mother must be firm. A few lollies given immediately after the meals will do but little harm, if the promise of them will induce the child to eat enough at the regular meal times. Begin in the morning with cocoa and milk, or boiled milk with a little coffee or a very little tea with it, just enough to taste the milk; give also a poached egg and a piece of thin bread and butter, or a few plain biscuits with butter or jelly. Then, no matter how little was eaten, give nothing for nearly four hours, or till dinner time. As dinner approaches some ripe fruit will often help the appetite. But see that it is ripe and soft, and that the skins and stones are not eaten. For delicate children allow at first no potatoes or vegetables. Soup is very good, but let the vegetables in it be given to the strong ones, and only the thin of the soup to the weak ones. Rice and milk at times is a good change from soup. In the evening, instead of tea give again the boiled milk and cocoa, or coffee, as in the morning. If the child does not improve on this a doctor's advice should be taken as to how far milk, or soup, or raw eggs may be allowed between meals. But remember that sponge-cakes are not easily digested, nor indeed anything in which eggs have been cooked for any length of time. Who would give a sick child a hard-boiled egg—one boiled for half-an-hour? Nobody with any sense; and yet you constantly see given to the sick sponge-cakes and puddings in which eggs have been heated for perhaps an hour or so. Raw eggs are far easier of digestion than boiled ones, and poaching is the next best to using them raw. If beat up and put into a rice pudding, let the pudding be cooked well first, and the egg not stirred in till it is just going to be eaten. The weak child will then get all the good of the egg.

To return to the question of how often babies should be allowed the breast. Two points of difference between them and older children must be borne in mind: first, the mother's milk is always adapted to the age of the child. During the first month it is very different from what it is at the tenth month, and so with the child. At first it has almost no stomach, and hence it can take only a very little milk at once, and it needs it very often. The milk is so like blood that it takes almost no digestion, and so for the first month a child should get the breast as often as every hour, unless it is asleep. But as it grows older its stomach becomes larger, and it can take more milk at once, but

requires longer to digest it; so that by the time it is ten months old there should be about three hours between each drink.

About weaning a child. The age is of less importance than some other matters. The most important matter in this climate is—never wean a baby during the hot weather. Of children under one year old, generally three times as many die in February as in June. In Melbourne and suburbs in 1876 as many as fifty-nine infants died in one week; whilst in June last year fifteen, sixteen, and nineteen were the figures each week. No careful mother then will run such a terrible risk, and do anything to weaken her child during the hot season. Do not wean between November and April, rather wean too soon in spring than wait till the proper time in summer; or, better still, delay the weaning till autumn is well over. People, as a rule, are in too great a hurry to wean. The finest babies I see are those suckled long, and it is well known that nursing-time is often the healthiest that a woman enjoys. In China, Dr. Dudgeon, one of our missionaries at Pekin, reports that there, as a rule, babies are suckled three years, the women doing this that they may have fewer children; and such long suckling has doubtless much to do with the comparative scarcity of scrofula, diseases of the bones, and consumption in China. I would by no means advise suckling that long. Once a child's teeth begin to come, let him be gradually taught to seek the breast less; feed him, especially in the earlier part of the day, with cow's milk boiled with a little bread, rice, or barley. Do not use much maizena, sago, cornflour, or arrowroot; none of them can make flesh or bone, only fat. They are useful at times in sickness, but rice and baked flour are far better for healthy growth.

When to complete the weaning process is greatly a question of season and health. If a child is feeble and slow in growth, I would give him the breast well into his second year. Let no one frighten you that your milk is bad; it must be bad indeed to be surpassed by such cows' milk as we get in a city, or by any other food. If mothers would, however, only drink less tea and use more oatmeal, barley, or rice gruels, we would hear less of bad milk and see more healthy children.

No. III.

Let us now consider how to bring up those unfortunate children who cannot get their mother's milk. Many a mother who thoughtlessly gives up nursing her own child little knows the risk to which she puts it. A wet-nurse can never be as safe as a mother. Babies cannot live by milk alone, no more than "man can live by bread alone." A mother's love, and petting, and joy in her child go far to carry it safe through the dangers of the first year. Thus a clever French doctor who studied this matter gives it as a fact that while out of a hundred children suckled by their own mothers about eighteen died in

their first year, twenty-nine died who were suckled by wet-nurses. Let no mother then lightly refuse her motherly duties. Nursing is good for both her and the child. Indeed, Sir Astley Cooper and others of our greatest surgeons believed that cancer often arose from the refusal to suckle children. Let mothers remember this, as well as the fact that at least one baby out of every eight is killed by the change from the mother's breast to the wet-nurse's. I well remember how earnestly our professor of medicine in the university at home warned us never to countenance the use of a wet-nurse except for some very good reason. He is still alive, a celebrated doctor, and one of Her Majesty's physicians. Besides the risk to the child itself, there is the more terrible risk to the wet-nurse's child—a risk four to one if it is to be brought up entirely by hand. Dare any mother, then, for mere ease, convenience, or fashion, sacrifice the life of her nurse's child? "The doctor allowed me" is no excuse, unless real and dangerous illness were present. It has been seen that about eighteen children die in the hundred when nursed by their mothers, but eighty in the hundred die under hand-feeding—four times as many, and this too in a carefully-conducted home under medical supervision; but what must it be when the wet-nurse's child is handed over to some ignorant old woman? At the best we see out of every five babies brought up by hand four die in their first year. But it may be confidently stated that farmed-out as a poor wet-nurse's baby is likely to be in Melbourne, many more will die, and the fashionable mother who employs a wet-nurse may be certain that in six cases out of seven she has killed the wet-nurse's child. Will the doctor share this responsibility with her? The figures are from the recognised text-books on the subject; every doctor can easily find them if he wants to.

But the wealthy are not alone to blame in this matter. I have seen more children by far brought up by hand because the mother went out to work than for any other reason; and, worse still, often simply because the father was too idle, too proud, or too drunken to work. I fear it is idle pleading with such men for the lives of their children. We have in Melbourne hundreds of men who, because they have once been clerks or drapers, will not, they say, "stoop" to do "manual labour." Yet they can stoop to live on their wife's earnings, and to kill their children.

Of other reasons for not nursing a child I need not speak, for further speaking would do little good with the class to which I refer. Killing the baby is not their first sin.

Mother's milk having been proved the best and safest infant food, of course in seeking for something to take its place we look for whatever in nature seems to resemble it most. Cows' milk naturally first takes our attention; and certainly, taking it all in all, no artificial food ever invented has proved so generally useful. Of course there are peculiar infants, as we have peculiar people, and some babies may do better on so-and-so's food; but for children in general no artificial food can com-

pare with cows' milk. Cows' milk, however, when got direct from the cow, is much stronger in some things than human milk; and goats' milk, though nearer the latter, is also too strong. Asses' milk comes nearest to that of woman in strength and composition; but asses are not common enough to be of much service for milk, so that our only plan is to make the best of cows' milk.

To understand how to feed an infant we should know a little about what makes a complete food. It is rare to find any article of food that would support life of itself; indeed, milk is perhaps the only food that can do so, and that is because it has in it all three of the necessary things that go to keep up life, and these at the same time in the right proportion. The three necessaries in food are:—First, nourishment to make flesh, or, as they are called in books, flesh-formers; good examples of these are seen in the white of an egg, in cheese, in the lean of butchers' meat, and largely in peas, beans, lentils, and that class of seeds. Secondly, we need what are called heat-formers, because they supply heat to the body; but they might also be called fat-formers, for they can also make fat in the body; we see such kinds of food in butter, oils, sugar, starch, and gum. Thirdly, we need also salts or mineral matters in our food, not only to make bone, but to make blood, and to carry on the many necessary chemical changes in our bodies. Common salt is no true example of these, for men have lived healthy for years without any common salt at all; and scurvy, the disease that most certainly shows the want of these blood salts, generally happens when men have too much salt meat. All natural food contains these health salts; but when we want them in quantity we must use limejuice, ripe fruits, vegetables, soups, and gruels. Besides scurvy, rheumatism and many skin diseases are due to the want of these salts; and whenever a child has frequent skin eruptions without seeming cause, its food, or its mother's food, should be examined and put to rights. No animal can live long on any one, or even two, of these three kinds of food; all three must be in our daily diet if we are to be healthy, or even to live beyond a few days. A growing child must have flesh-formers, heat-formers, and bone-formers in plenty, or it will die. Many children do die simply because while they do get plenty of food it does not contain all three of the necessary kinds of foods. This, as we shall see, is the fault of sago, arrowroot, maizena, and cornflour. These prepared foods are made by washing out at great expense all the flesh and bone-formers from corn and other foods, so that nothing but starch is left, and starch we have seen can only make fat and heat. So many a poor child has been starved on maizena made with water. The child sometimes seems fat, but it has no firm flesh and bone, and soon it pines and dies, starved unintentionally but surely.

Cows' milk differs chiefly from human milk in that it is too rich in flesh-formers and bone-formers, and too poor in sugar (a heat-former). At the same time cows' milk, unless from country and grass-fed cows, is also acid, and will turn sour in the baby's bowels, and will cause wind and purging much more readily than mother's

milk. Now, while we can with healthy children over a month old make a fairly good milk of it, in spite of these drawbacks, it is no easy matter with infants under a month, or with weakly ones. So difficult is it with young infants that few mothers dare deprive them of the breast the first few weeks. A young infant should need no medicine; the earliest milk is both food and medicine in one, and that is why it is so difficult to imitate it.

To make a milk for babies under three months, try and get one cow's milk, and as fresh as possible. Add to it an equal quantity of hot water, and to every teacupful of this add half a teaspoonful of sugar and two teaspoonfuls of lime water. Cows' milk, however, varies so much—and infants too for that matter—that some babies will require more milk and less water. If purging sets in, at once leave out the sugar—it will make it worse. At the same time boil both the milk and the water, and add two tablespoonfuls of lime water instead of two teaspoonfuls. Boiled milk is not quite so good as milk just warmed by the hot water; but in summer, and when there is any sickness about, be sure and boil both the milk and the water. Boiling kills any of the germs of disease that may have got into the milk either from the cow, the water used by the milkman, or from bad air: it also checks the souring of the milk. In hot weather, when milk sours quickly, it is also a good plan to stir into each pint of milk as you get it as much baking soda as will lie on a shilling: this will make it keep sweet much longer.

If a mother has a little milk of her own, cows' milk may still be given to the child at the same time. It is not quite true that the two milks disagree, and at any rate the mother's milk is so very much the better that nothing should hinder one giving the baby as much of it as possible. Doubtless the two milks do seem at times to disagree, but the fault is not in the mother's but in the cows' milk. Probably it may be too strong: if so, add to it more hot water and a little lime water, or as much baking-soda as will lie on a threepenny-piece. If it still disagrees, try it with two parts of barley-water. Even barley-water alone will often work well with the mother's milk.

If a baby does not seem to thrive on the cows' milk so prepared, give up the sugar, and buy milk sugar from the chemist's, and use it in rather greater quantity. If the bowels are bound, instead of lime water add a little magnesia, about as much as will lie on a threepenny-bit, to each bottle of milk. Those who use much lime water should make it themselves. Let them get a small piece of new lime from a building, and put it into a clean bottle, pour warm water on it, and shake it up very often for a day or two. When you are going to use it let it stand till quite clear, and use only the clear water off the top. A small piece of lime will make many bottles full.

As the child gets older use more milk and less water until its teeth appear, when it may get nearly pure milk. The teeth should always be seen before any food but milk is given. Prepared foods, no matter

how good they are, can never for general use compete with milk. Liebig, perhaps the greatest chemist that ever lived, invented an infant's food, and, if such a thing could be made, he of all men was the man to make it. It has now received a thorough trial, and while it has answered well with a child here and there, the *Lancet* recently stated that its use had been given up in one of the London orphanages. Liebig's food contains starchy matter, and Dr. M'Donald of that orphanage gives it as his experience that infants under six months cannot digest starchy food. When therefore such a great professional chemist as Liebig has failed to make an artificial food as good as cows' milk, what can we expect from the numerous patent foods advertised by nearly every druggist? It may safely be said that one half of them do positive injury to infants, and I do think Government should prohibit by law the printing of such barefaced lies as may be read any day on the labels of many patent foods. It is cruelty as well as murder to lead an anxious mother to believe that a packet of starch is nourishing food for her baby. If nourishment means what makes flesh and bone, then those starchy maizenas, cornflours, &c., do not contain one particle of real nourishment, as was before explained ; and a baby fed chiefly on them will assuredly die of starvation. Good honest flour or ground rice are real foods, and three times cheaper to boot ; in fact, many of the best infant foods are just common flour sold at a high price and under a fancy name. Barley meal and the finest parts of oatmeal are also splendid food for babies when the teeth appear, and the best specimens of the English, Scottish, and Irish races have been brought up on these natural foods. Baked flour, made either by boiling some dry flour tied tightly in a piece of strong linen, or by baking in a slow oven some flour tightly packed into a jelly tin or cup, is even better for children than unprepared flour. But all these foods should be made up with some milk as well as water.

There are a few children who will not thrive on milk, and who refuse it, to the dismay and trouble of all about them. Such will probably require to be constantly under a doctor's care, and for the first few months of life raw eggs offer the best chance of complete nourishment. For eggs, like milk, contain all three of the needed foods. They must not, however, be boiled, but should be given raw, yet warm. Place an egg in the shell in pretty hot, but not boiling, water for a quarter of an hour, and then break the shell and mix the egg thoroughly with from six to nine tablespoonfuls of lukewarm water. Take care that the water is not too hot, or it will cook the egg and spoil it for the baby's weak stomach. A little sugar may be added if it does not disagree. From two to three eggs a day should be sufficient.

Condensed milk, lentil flour, raw meat juice, and other things, are needful in special cases, but into these we cannot enter here. Special knowledge is necessary for each case, and there is no lack either of doctors or institutions in Melbourne where the perplexed mother can get good advice.

No. IV.

In our last article we showed that no better food had been invented for motherless babies than cows' milk, at least none that could be easily got—for though asses' and even goats' milk are in some respects better, yet they are hardly in the market. Still, in some parts of Europe foundlings are sent out to the country to a goat farm, where they soon learn to suckle the goats. It is said that many children, seemingly at the point of death, have been saved by thus getting the goats' milk direct from the goat itself. Certainly in a large city like Melbourne, goats' milk, where it can be got, has always the advantage that it will be fresh, natural, and pure. The goat is neither spoiled nor poisoned, as are many poor cows, by unhealthy food like brewers' grains ; nor can their milk be so readily adulterated with water and something worse. It is not always easy to tell when milk is bad or adulterated, but if, after a careful trial, a baby frequently vomits its milk in large hard lumps, you may be sure that the milk is either acid or too strong for that child's stomach. A mother should not be alarmed simply because the milk is curdled when vomited, for it ought to be curdled ; milk never digests till the stomach has first curdled it ; the milk should be suspected only when the curdled lumps are large and solid. In such a case first try the effect of more lime water in the milk, or, if the bowels are not free enough, instead of lime water add as much magnesia as will lie on a sixpence. If this does not meet the case, then, instead of adding warm water to the milk, add warm barley-water or rice-water ; equal parts of milk and barley-water if the child is about three months. Barley and rice contain starch, but contain also flesh-formers and bone formers, which the child requires ; and though the starch may not be digested it acts as a soothing medicine to the stomach and bowels, and at the same time prevents the formation of a hard curd. Mothers for similar reasons sometimes find arrowroot more useful for a time than milk ; but arrowroot and maizena, as we have seen, contain no flesh and bone formers. It should thus always be borne in mind that barley or rice water, while they can do quite as much good as arrowroot, will at the same time supply other good things, and prove besides much cheaper. Sometimes these vomiting attacks last over several days, and while milk is rejected a little brandy in arrowroot made with water will stay down. Now, while this fact is of great value in an emergency, it should always be borne in mind that brandy or other stimulants cannot long support life. Like starch, brandy can make heat and fat only, but not a grain of flesh or bone. No mother then should ever allow two days to pass without other food than brandy and water ; every day without other food means increasing weakness and less chance of saving the baby's life. Take it at once to a doctor ; meantime, if none is within reach, try some of the following remedies, and remember that a little piece of ice placed in any one of them will be of great assistance in checking the vomiting :—

No. 1. The whites of two eggs, two tablespoonfuls of water, two teaspoonfuls of brandy and a pinch of baking soda ; mix, and give one teaspoonful every ten minutes.

No. 2. Milk, half a wineglassful ; sodawater, the same ; brandy, two teaspoonfuls ; give also a teaspoonful every few minutes.

No. 3. Rice water, a wineglassful ; brandy, a teaspoonful ; mix, and give a teaspoonful every few minutes till the vomiting ceases.

Now, while some of these prescriptions will frequently stop vomiting, it is of almost more importance that we remove the cause of the vomiting by soothing the irritated nervous system and cooling the feverish state that so often goes with it. Put the child frequently in a bath of lukewarm water for ten minutes, and apply the cold cloth to the head, as described in my first paper (see page 5). Another useful help, especially if the child is not so hot, is to mix half a teaspoonful of mustard with cold water to the thickness of a paste ; spread this on a small piece of stout brown paper, and apply the mustard-side to the pit of the child's stomach. Let it stay on till the skin is well red—perhaps for ten minutes or longer. When red wash the mustard well off and apply all round the body the wet handkerchief before advised. See that the handkerchief is tightly wrung out of cold water, and well covered with a flannel binder. If the child is hot, change this every half-hour.

If diarrhœa is present with the vomiting, try the following—No. 4. Take of boiled milk allowed to turn cold, and of lime-water, half a wineglassful each, and add one teaspoonful of brandy ; give a teaspoonful every few minutes.

Stimulants should, however, never be given to a healthy child. Its delicate organs cannot long be so excited without injury. But there are cases of wasting and weakness where a little good wine or brandy given in milk for a few weeks will do wonders for a child ; but don't forget that continued too long they will again injure it. Brandy is like a whip, which will excite a tired horse to get over the hill, but too much whip will only drive it into exhaustion, not strength. To use brandy or wine to the best advantage mix a tablespoonful of the wine with four tablespoonfuls of hot milk, and let the baby take it warm. As the child improves in health, give it some of this, only occasionally—say half of these quantities—and only once a day, and break it off entirely as soon as possible. If wine disagrees use half the quantity of brandy. But again let me repeat the warning that if continued too long the child will be injured for life. It is the constant experience of doctors that in some diseases a quantity of stimulants that would poison the same person when well can be taken without affecting the head in the least. Certain diseased states seem to be able either rapidly to burn up or to throw out the poison that any but a small dose of alcohol always leaves in the healthy body.

Purging and vomiting in hot weather are often excited by simple carelessness. The milk gets sour in the bottle or the teats. The drinking water may be warm, or have stood exposed all night, sucking in the dirty close air of a hot room—for water will dissolve air as well as sugar—and neither milk nor water for use in food should be kept in a sleeping-room. In summer, then, the milk-jug should always be held to the nose before being used for the baby, and the least suspicion of sourness should cause it to be used for some other purpose than feeding the baby. Sourness in milk is a very good quality for baking cakes and scones, with a little baking soda, and for other purposes of cooking, but babies' milk must be free from the least taint of sourness. If not quite sure of the milk, boil it, and see too that the water is boiled.

The bottle and teats require equal care always, but especially in hot weather. Every baby should have two bottles and at least two teats ; and when one is in use the other should be steeping in cold water, to which some lime-water or baking soda has been added to destroy any sourness left about it. In the absence of baking soda use salt in the water, but it is much inferior to the soda. Clean out the inside of the teats with a bit of flannel tied on the end of a penholder. If the bottle has a tube this must be cleansed and brushed out frequently, and should, like the teat, lie in steep when not in use. But tubes are so sure to get sour and dirty in spite of great care that the old-fashioned bottle, without any tube, but with a teat only, is much safer.

The position in which a child lies or sits when using the bottle or being fed is of some importance, especially with those babies who frequently retch or throw up their food. Beyond doubt the same position as a baby takes when at its mother's breast is the best for keeping the milk down. Bottles have been invented for this purpose, being hung from the nurse's neck so as to lie about the position of the breast. But even with ordinary bottles this can be managed, or the child can be kept up in a half-sitting position by pillows while it is taking its milk. But a delicate baby, like a little chicken, is always the better for the heat of its mother's body when being suckled or fed.

Of course a great deal more, both useful and interesting, could be written about food for infants, but it is a common experience that the more we are told the less we remember ; and I fear that not only would any further advice be forgotten, but that that already given would lose much of its force and weight, and become almost buried out of sight by new and less necessary matters. It is of far more importance to my readers that they should know how to make the best of cows' milk than to read a long list of things difficult and expensive to get that have been used instead of it. If a mother cannot bring up a child on cows' milk, she will hardly bring it up on anything else without frequent medical advice, and that should be taken at the beginning, and not when the child is already half-dead.

We shall in our next article take up the subject of fresh air. Air is more necessary than food to all living creatures ; indeed, some doctors

call both air and water foods. Meantime, some hints on exercise and other matters will fitly close this paper.

In large foundling hospitals where there are perhaps only a dozen nurses to a hundred babies, it is evident that each child will lie much more in bed and get far less of nursing, petting, and joyous exercise, than a baby gets at home. Now, exercise of the limbs and body has always been found so necessary for health in grown-up people that some very skilful doctors have blamed much of the loss of life in large orphanages on the want of exercise and the almost constant lying in bed. Certainly those babies seem to thrive best who have most nursing. I have seen a delicate, consumptive baby—one of twins, who had lost its mother, and seemed as if it could not live long—grow fat, strong, happy, and merry when it was put into a family where there were several young girls. If too much nursing could have spoilt the baby it would have been spoiled. Certainly it was spoiled in some points of character, becoming under the jealousies of its many nurses petted, conceited, and quite a baby flirt; but the improvement in its health was marvellous, and could only be attributed to the amount of exercise it got at the hands of so many fond nurses. The dancing, jumping, and fondling of the baby all go to stimulate the liver, lungs, stomach, and other vital organs of the body, and help greatly to keep them all in healthy action and change. A caution, however, must be given here against such exercise in any illness except that of slow wasting. In diarrhœa, fevers, inflammation, &c., the quieter a baby can be kept the better—in some cases a sudden movement might cause death.

Perambulators are perhaps a necessary of this busy age; they do great good in saving from crooked spines the young sisters of the baby who would otherwise have to carry it. But in so far as a perambulator takes the place of a mother in nursing her baby, it is sure to check its natural growth, if not also to give rise to some of the many illnesses of childhood. Who, too, has not seen in Melbourne a baby in its perambulator freely exposed to our blazing summer's sun, while a little boy or girl of six or seven years is suffered to act as nurse or mother? In winter the same farce is repeated, and while nurse Johnny plays with other boys in the street, baby is shivering itself into an inflammation of the lungs under the full blast of a cold north-easter. Perambulators are of great value in as far as they often allow of the baby being out in the fresh air instead of a close house; but it needs a mother's eye to get all the good of this without dangers perhaps as great. See then that baby is nursed and dandled and fondled enough; better, too, let it crawl about on the floor and dirty its clothes than keep it spotlessly clean, if cleanliness means also to lie in bed or sit in a perambulator most of the day.

To make any part of our body strong we must use it. Whose arm is so strong as the blacksmith's, and who uses it more? So a baby that lies coddled up in many clothes, or sits long in a perambulator, cannot grow strong. Let it stretch its legs and kick them about; let it toss

its arms and have a good cry now and then, to expand its lungs. But see that its legs are strong before you attempt to let the baby walk; better let it crawl a few months longer than force it to walk too soon, with crooked legs for life as a consequence.

No. V.

Air is far more necessary to life than food. A few minutes' want of air will destroy life, while we all know cases where no food has been taken for many days, and yet life has finally been saved. But air is such a strange thing—so subtle; it cannot be caught, weighed, and handled, except by a trained scientist; and so it comes to pass that people in general hardly believe in air except under the name of wind. Wind compels belief; it tears up trees and knocks down houses, and yet all this is done by the mere weight of the air. Water, everyone knows, will always run down hill, and this simply because it is heavy; and the terrible strength and destructive force of a flood or of a huge wave is simply due to the weight of the water. So we have air floods and huge air waves miles in height; and all the terrible effects of hurricanes, storms, and gales are simply due to the fact that air has weight. Ventilation would be impossible but for this fact, and the science of ventilation consists in making use of the different weights of warm and cold air. Both warm water and warm air are lighter than cold water or cold air. And so in boiling a pot we heat the bottom of it, knowing that the coldest water, because it is the heaviest, will be sure to flow to the bottom of the pot, and displace that which has turned hot and lighter. So in a house the hot air floats up to the roof, and the cold air tumbles in on to the floor from every chink, keyhole, open window, or door. It tumbles in as surely as water would were it sent in through the keyhole. During last winter I tried the heat of my room at different heights from the floor. There was a good fire on, and the air came into the room from the top of the window, which was about a foot open. Well, though all the cold air came in about nine feet up, and though the fire—a brick hearth—was close to the floor, I found the temperature on the floor 56°, while that at the roof was 71°. By this beautiful natural law we get constant supplies of fresh air as we lie sleeping in bed, if no stupid curtains are in the way, or if still more stupid people do not take means to prevent it. As we lie in sleep the hot air we breathe out, being lighter, floats away up to the roof, while fresh cool air from all around takes its place. Thus it is not good for a sleeping room to be too warm; if it is the air about our faces cannot change so easily, and we breathe the same dirty air again. For air, like anything else that goes into the body, comes out again dirty. It washes out the lungs, carrying away the

decayed and waste matters of our blood. Many people that would shrink from drinking dirty water never give a thought to the dirty air they make and live in. And yet if this dirty air is breathed over and over again, it may produce many diseases, but especially two very terrible ones—consumption or typhus fever.

Watch a baby or anyone asleep, and see how fast the chest rises and falls. Each time it rises air is sucked in, and as it falls again the waste air is driven out. Now a baby will dirty a cubic yard (a yard every way) of air in about half an hour, and a grown-up person as much in about eight minutes. This shows how important it is to change the air in our houses often. The air does get changed pretty often, or many of us would have been dead long ago. But most of us are so afraid of cool air that the air is rarely changed enough. Luckily for us we cannot build air-proof houses. Wood, stone and brick, all let air through them; slowly, it is true, but still surely. Then keyholes, joints in the doors and windows, and chinks in the floors and walls, all let in the outside air. It was observed that in the great Crimean war of 1855, while our soldiers were lodged in tents—through the canvas of which air could easily penetrate—they were wonderfully healthy in spite of the cold weather; but that after the closer huts were built the sick list increased rapidly. A somewhat similar fact has been observed in connection with fever hospitals, rough wooden sheds hastily built to meet an epidemic having often proved better than stone-built hospitals, where, though the draughts were less, the fresh air was also. But to confine our observations to the effects of bad ventilation on children, I may quote the Dublin Lying-in Hospital, where, sixty years ago, out of every hundred children born in it, seventeen died before they were fourteen days old. A new doctor being appointed who had some ideas of ventilation, which he carried into action, the deaths were finally reduced to less than two in the hundred. Thus eight times more children died when the air was bad. Let mothers think of this, and no longer cover up their children's faces with handkerchiefs and keep their houses close and foul. In this climate we have not the excuse they have at home, where people are glad at times to shut out the terrible cold, even at the risk of taking consumption. The air here is so warm for eight months in the year that open windows and doors are delightful. To a weak child fresh air is the best medicine. Quite recently a doctor in one of the large London hospitals published some lectures in the *Lancet* on the cure of some diseases, and especially children's wasting diseases, by what he called hyper-ventilation, which simply means extra fresh air. He wrapped the sick children well up in blankets and made them lie close to an open window. This practice is a little risky, except in skilled hands, and had better not be attempted except under medical direction and advice; but it shows what can be done by fresh air, for the doctor publishes some remarkable cures by this method of fresh air treatment.

Ventilation, then, as has been shown, is effected by the difference of weight between the cold air outside and the warm air inside a house,

And the science of ventilation consists in so managing the incoming fresh air that it is not felt as a draught. Now there are three ways of managing this. First, by letting the air in slowly, for air moving only three feet in two seconds cannot be felt by our most sensitive nerves. However, none but large and lofty rooms can be ventilated this way. Most of our houses are too small for the number of persons living in them, and we must make draughts to let in sufficient air for health. The second plan is to direct the draught so that it does not blow directly upon us. Mr. Tobin's plan does this, his upright air pipes sending the draught straight up to the roof, where it breaks and falls down just as the shower of a fountain does, in small and feeble streams that we do not feel. Proper ventilation requires two openings, one to let in the cold and fresh air, and one to let out the hot and dirty air. And from what has been said before it is evident that the outlet for the warm air must be highest up, because the warm and bad air goes up to the roof. A pretty good plan of managing this is to keep the upper half of the window down at the top. The bad air can get out at the top, and the fresh air will come in at the middle of the window. From the middle, like a jet of water, the fresh air will follow its first direction for a time, and that, of course, is upwards, so that like in Tobin's plan it will by-and-by fall down around us in a finer and quieter shower, and without the feeling of a draught. One constant difficulty with all plans of ventilation is that the outside wind varies so much that a small hole will at one time let in far too much air—in fact, quite a draught—while on a calm day it will be too small and useless as a ventilator. We always find it so; common sense is needful in everything. And if a man or woman has not sense to open his window at the top, say just half an inch when the wind is strong, and say two feet when there is little or no wind, then no amount of writing on my part can save him and his household from almost constant mistakes and illness. One rule may be given for all winds in this climate, and that is, never have your window wholly closed at the top; night and day, in storms and calms, keep it open. How much open must be left to common sense, and it may have to be altered several times a day.

The third plan is a simple one, and it need not interfere with the other two, and should, in fact, be practised twice a day, even where the other plans are in use. It has also the merit that it alone will ventilate a house on a calm day, or when the air outside is as warm as that inside. It consists in making a draught. Open every window and door in the house, and then one by one swing every door in the house. Swing it backwards and forwards over a dozen times. This drives the fresh air into every corner and cranny, and sends the foul air out of its resting-places, where it often hangs, destroying and poisoning our food and drink. See that your beds are all turned down when this thorough ventilation is practised; loop up the curtains, too, out of the way. Open your cupboard doors, and give free vent to the life-giving and purifying air. To any one sick and confined to bed this sweeping of the house with fresh air is most refreshing. If such a one is very susceptible to the cool air protect his head for a few minutes from

the draught by a thin handkerchief, but the sooner he drops that the better.

Besides always keeping open the tops of your windows, see that the chimney is not stopped up by a bundle of rags. A chimney is a useful outlet for bad air, and should always be left free.

A fire is often useful, too, in promoting ventilation. It causes a great flow of hot air up and out of the chimney, and of course fresh air rushes into the room to take its place. But when a fire is burning in a room it is especially dangerous to shut the windows, doors, and other inlets for fresh air. So surely as we do so as surely will the fire suck its necessary supply of air through the floor and the earth below. Some will come through the walls, but most soils are much more open than the walls, and as the air is sucked through the soil below the house, so surely will it bring with it foul and deadly odours from the drainage water with which our bad surface drains soak the soil. These drains will soak the soil for twenty feet on each side of them with the worst of their filth, and who can tell what diseases may lie below their house ready to enter once the fire is lighted and the windows and doors closed? Gas has been known to travel about thirty feet through the earth into a dwellinghouse in quantity sufficient to destroy life. Who would think of filtering their drinking water through earth soaked with sewage? and yet autumn always sees an increase of diphtheria, due to this filtration of our breathing air through the dirty soil below our houses. The cold nights of March see the evening fire begun in the parlour, and that is so far good, a fire being an excellent ventilator; but see that the air it so strongly sucks into the house is good air; see that it comes in by the windows, and not by the floors. But in spite of all our care we can never be safe until our houses are cemented below the floors, and the soil of Melbourne all deeply drained.

In considering how many people may sleep in a bedroom, measure it, and multiply its length by its breadth, and that by its height, and divide by 500. Thus a room measuring eleven feet by ten, and say nine feet high, contains 990 cubic feet of air space, and two people are all it should contain for healthy sleep, allowing for even ordinary ventilation.

I had intended saying more about fresh air and ventilation, but as unavoidable causes will make this my last paper, I must now say a few words about teething powders. But first let me say that if mothers would only feed their children and themselves on honest milk, and food that contains bone-formers, instead of trashy starches, teething would not be the time of pain and danger that it is. Bad food, bad air, and careless clothing and nursing, make a child weak, and then its teeth trouble it. A good long paper would be necessary to do justice to this subject, so much harm do these powders do; but that is now impossible. The chief danger of these medicines is, that while they may be useful in one complaint they may do incurable harm in another. If a child seems ailing at a certain age ignorant people

at once say, "Oh, it's the teething that's wrong with it." The child may be sickening for typhoid fever, for inflammation of the lungs, for croup, diphtheria, or scarlet fever—they can't tell; but all the same it gets a teething powder. Now, there is one great public wrong about the sale of these patent medicines—there is no law to prevent a man from printing as many lies as he likes about them. A greedy man, or it may be only an ignorant man, who cares nothing for the sufferings of little children, wants to make money. He invents a mixture, it may be of magnesia, or chalk, or simple flour, and calls it a teething powder. He folds them up in a nice printed cover, on which he appeals to wearied mothers, telling them how that this powder will give sleep, soften the gums, &c., printing just what lies he thinks will best sell his mixture; and against this there is no law. Let a man sell a bit of cotton ribbon as silk, or a trumpery brass ring as gold, and the law will be down upon him at once, his knavery will be made public, and all the costly machinery of prisons, &c., will be made use of to punish him. But a man may with perfect safety tell as many lies as he likes about a patent medicine. He may call a poison a life-giver, and can kill hundreds of children, cause more to suffer much pain, and bring sorrow into many homes; what matters it? If the man makes a fortune he is content, and nobody seems to care. That this is no fancy picture legal exposures have shown over and over again. Medicines warranted to contain no opium have been analysed and found to consist of little else. But any chemist will tell you that he makes his living off patent medicines. Some of these are good enough, but are merely medicines that every doctor uses, sold under a fancy name, and at four times their proper price. The law should compel every patent medicine to have printed on the label what it contains. Then it could be told what it was good for, and in what cases it would be dangerous to use it. This would be simple justice, and is what the law demands with reference to coffee and other minor matters. Till it is done, suffering and death among children will always be excessive, and that chiefly among the more honest people, as such can never think that any one would dare to tell such lies about medicines. Never, then, give any teething powders to your child; they may do good at one time, and be quite the wrong medicine the next time the baby is ill. As a rule a little fluid magnesia or castor oil will do all that the teething powder will do, and at less cost and danger.

But medicines are used far too often. Mothers often say to me, "Oh, baby was so hot that I gave him a little cooling medicine." Now many of the best doctors believe that no medicine can cool a fever. Two medicines are said by some to have a cooling effect—quinine and salicin; but no one would ever think of giving them to a baby. Common sense, however, might surely tell any one that cold water will cool. Doctors know this, and cold baths are now in daily use in the great fever hospitals throughout the world. Rheumatic fever, typhoid fever, and even small-pox, have been found to yield to cold baths when no other treatment would save life. Cold water is dangerous only when the body is cold. Always remember that, and also that unless

the body warms well after a cold bath it must not be repeated. But when the body is hot cold water can only do good, and when very hot often nothing else will save life. See and wet the head first, and then put the body into the cold bath for a few minutes. Be careful afterwards to watch that the feet get warm. Warm feet always relieve the head, and if they should keep cold too long after a bath, put a warm bottle to them, well wrapped in flannel. The wet handkerchief, before spoken of, also cools a hot skin, and frequent sponging will do instead of baths where the heat is not great. Remember also that even warm water will cool a feverish child, and if a cold bath makes you afraid try a warm one. If many baths are needed, and in some fever hospitals six cold baths a day are given, a handful of salt in the bath will improve it. With very weak children, who are often hot and cold by turns, a better plan is to give one warm bath and then rub the body all over with mutton suet, mixed with a little sweet oil.

And now I must bid my readers farewell, with the hope "whatever kills our babies" may have less chance to do so now than before. And let us never forget that it is our ignorance and folly that make most of the diseases we see, and that "it is not the will of your Father who is in heaven that one of these little ones should perish." Disease is evil, and in fighting against it we have always God on our side.

Mason, Firth & M'Cutcheon, Printers, Flinders Lane West, Melbourne.

Australian Health Society,

MELBOURNE.

Office: 14 COLLINS STREET WEST.

DISEASES

WHICH SHOULD BE PREVENTED.

A LECTURE delivered under the auspices of the Australian Health Society.

By JAMES JAMIESON, M.D.

Lecturer on Obstetrics and Diseases of Women and Children in the Melbourne University.

When people are well, there is nothing they relish so much as a fling at the doctors. The great French dramatist Molière was never done satirising the follies of the physicians of his own day. He compared the doctor to a blind man armed with a huge club, who comes to the patient as to one engaged in a life or death struggle with an enemy, and by way of ending the quarrel brings down this club with tremendous force—on the head of the enemy, disease, perhaps, and so settles the matter by curing the sick man; but there was just an equal chance that the blow fell on the poor man fighting for life, with most unfortunate results for him. No doubt there was a good deal of truth in Molière's way of putting the case, and in fact it was in part true long after his time. Now-a-days, however, medical men have adopted gentler methods. We have come to see that it is better to coax the enemy, disease, to let go his hold of his victim; or if the battle must be fought out, we husband our patient's resources so that he may come out not only victorious but uncrippled. For many years the wiser and more thoughtful members of the medical profession have got a stage further even than that. They have become convinced that the noblest field for the exercise of their talents and skill is that of the prevention of disease; and it is not too much to say, that to them is owing, in great measure, the adoption of improvements in many of our social arrangements which tend to lessen the amount of sickness and mortality. I do not know that those of us who labour in this field have yet succeeded in awaking the public mind to a sense that sanitary measures, private or public, if often apparently troublesome and expensive,

are in reality an investment which gives an ample return. Most people, I fear, have yet a lingering feeling that the benefits to be obtained by adopting them are generally very doubtful, or at best so remote that it is hardly worth troubling. Of course these remarks apply mainly to those schemes for sanitary improvements which are on such a large scale as to imply increased taxation, and perhaps interference with the vested right to commit nuisances unchecked; for everybody recognises that much suffering and disease, and many cases of death, might have been prevented. When a strong man indulges in drunken habits, and perhaps dies in a fit of delirium tremens, anybody will say that he has come to an untimely end, and that a right sense and knowledge of what was due to himself, to his friends, and to society, would have prevented his premature death. Or again, if a child is allowed to fall into the fire, or to swallow some poison, people say that if more care had been taken the child might have lived for many years. But, after all, too many still look on the prevention of disease and death as depending wholly on the individual himself, or on the parents in the case of children; and so, with the reflection perhaps that there is no short and easy way of curing vice, or making the foolish wise, the matter is dismissed from the mind, and what is in theory allowed to be preventible is practically accepted as inevitable.

Till public opinion can be educated and aroused to a sense of the enormous loss of life from causes which are quite capable of being removed, there will not be more than half-hearted efforts made by those who are in authority. The extra sixpence in the pound in the way of rates or taxes, needed for carrying out what is required, is a very tangible something, the payment of which most of us regard as an evil to be avoided as long as possible. On the other hand, the connection of a high rate of mortality with an undrained soil, foul yards, and stinking cesspools is not at once seen, and so people go on as their fathers did, not knowing that their paltry saving in trouble and taxation is made at a loss even of money, to say nothing of precious health and lives whose value cannot be counted in pounds sterling.

If you will grant me a little indulgence I will try to bring before you, in as plain terms as possible, some facts and figures for the purpose of showing what might be done in the way of reducing the death-rate in this city of Melbourne. In doing so I will confine my remaks to some of the most important of the causes of mortality which make that rate, as I think, unnecessarily, nay, ridiculously, high. It will be impossible to treat the subject in anything like a proper manner without bringing forward some statistics; but, as a great display of figures would be out of place here, I will not trouble you with elaborate tables, but limit myself to large general results which can be easily grasped. When we consider the advantages which the inhabitants of Melbourne and its suburbs possess, it might fairly be expected that the amount of disease and death would be small in comparison

with that of England, and still more with that of London. The metropolitan district as a whole covers a large area, and is not densely populated. Our climate is a healthy one, there being comparatively few days in summer when the heat is so excessive as to be in itself a cause of disease, and it cannot be said that our winter weather is ever severe. Then, even in times that are called bad, there are probably very few persons who have not sufficient, perhaps abundant, food and clothing. Compare our condition in these respects with London, with its enormous and closely-packed population, a very considerable proportion of whom have constantly a hard struggle to obtain the necessaries of life, and that in a climate whose extremes of cold are a well-established cause of death. It appears, however, from the published returns that the difference between the death-rate of Melbourne and that of London is not great, though slightly in favour of this city, 20·39 as against 22·9 deaths annually to every 1000 persons living. To show further that the death-rate in Melbourne is excessively high, all that is required is to compare it with that of the rest of the colony, which is only 13·24 per 1000. Whilst, then, the number of deaths in Melbourne is just about the same as that in England as a whole (21·7), and not much less than that of London, the mortality in our country district is much less than that in the rural districts of England and Wales (19·1). It is evident that there must be something materially wrong in the sanitary arrangements of this city when such a state of matters has come about. If by any means the number of deaths in Melbourne and suburbs could be brought to bear the same proportion to the death-rate in the rest of the colony as the rate in London bears to that in the rural districts of England and Wales, it would be only 15·87 per 1000, about three-fourths of what it is at present, representing a saving of more than 1200 lives every year. It is very easy to talk about the uncertainty of statistics, and to say, as many do, that figures can be made to prove anything; but what I have now told you is matter of very simple calculation, which any school-boy, who has mastered the rule of three, might work out. Our condition, when compared with that of the rest of the colony, is not naturally so much worse than that of London, when compared with the rural districts of England, that we can calmly sit down and submit to that loss of more than 1200 lives every year as quite natural and inevitable. If sanitary improvements, private and public, can go any considerable way towards reducing that awful balance on the wrong side of our bills of health, who is there that will venture to say, that the cost of carrying out these improvements could possibly be anything like equal to the loss to the community, by the death of these thousands of persons of all ages and conditions.

If we were to stop at this point, perhaps there would be little purpose served. A mere enumeration of the lives, unnecessarily sacrificed every year, might cause regret; but in the absence of

any account of the causes of that excessive mortality, and of any suggestions as to how the evil may be remedied, the mere rousing of such a feeling would be little better than cruelty. To go into any minute analysis of the causes of death, would be out of place in a lecture such as this ; and I will therefore confine my remarks to three classes of cases, in which a great deal might be done in the way of preventing disease, and so saving life. Without trying your patience too far, I shall have something to say about our infant mortality, and about the deaths caused by consumption and by epidemic diseases.

The discussion of the question of the death-rate among children in Melbourne, and in Victoria as a whole, has not always been properly carried on. It is indeed surrounded with difficulties, when details are gone into, and especially when our death-rate is compared with that in Great Britain.

The mortality among children under five year of age, though rather higher in Melbourne than in the rest of the colony, does not differ from it to anything like the degree which we found when comparing the death-rate in persons of all ages. The census year is the only one for which we have reliable returns of the number of persons living at different ages, and for that year (1871) I have calculated the comparative mortality in town and country :—

——	Persons Living Under 5 Years.	No. of Deaths Under 5 Years.	Rate per 1000.
Melbourne and Suburbs	30,204	1793	59·36
Rest of Victoria -	86,484	4579	52·94

If that year is to be taken as an average one, it may be said in round numbers, that out of 1000 children under five years of age living in Melbourne, about 60 die yearly, as against about 53 in the rest of the colony. It can hardly be said that that is a greater difference than might be expected between town and country. The published statistics do not allow of a comparison of the death-rate among infants under one year ; and I can only gather, that of 1000 children born in Victoria, no less than 126 (or about 1 in 8) die before they reach the age of 12 months. That is the number given in the *Victorian Year-Book* ; but being curious to know how the ranks of our infant population get thinned year by year, I have made a calculation for the purpose of discovering how many of the 1000 would be left at the end of five years ; with the result that before that age is reached, just about 200 have dropped out. And so the loss goes on year after year increasing, until I would not like to say how many, or rather how few grow up to take their places in a country large enough for them all, and needing every active brain and willing hand to make it better. Once upon a time the Spartans were asked to give up fifty children

as hostages, but instead they offered one hundred men of distinction. Strange as the offer may seem, there is more wisdom in it than appears at the first glance. For there are unknown possibilities in children; and the old schoolmaster, who stood uncovered before his pupils, recognised the fact, and did not wish to fail in reverence for the man whom some future generation would perhaps delight to honour. Among these 20 out of every 100 children, who die in infancy among us, who knows how many germs of greatness and virtue have never come to flower or fruit? If we had known better how to take care of our new-born children, we English-speaking people might ere now have had another Shakespeare or Newton, and the task for which such a one was fitted remains undone.

There is a great deal of what is little better than fatalism in the view many take of this matter. If there is anything like order in nature at all, it must be absurd to suppose that the pitfalls besetting infant life are a necessity, and that enough has been said and done, when, to all intents and purposes, we say it has pleased Providence that 20 per cent. of our infants never get beyond their fifth year. The sooner we see that most of the pitfalls are of our own digging, and act accordingly, the sooner will it appear that quite another state of things is pleasing to Providence. If a woman who might nurse her child, instead of doing so, brings it up on the bottle, or feeds it with some miserable substitute for its natural food, such as maizena or sago, and the child gets diarrhœa and wastes away, or is suddenly carried off by convulsions, she does not clear herself of responsibility by saying it was God's will. Providential arrangements, as regards the most suitable nourishment for infants, are unmistakable enough; and if it had been intended that they should be reared for the first few months on anything else than mother's milk, it is not easy to understand why it should have been only in our own days that the immortal Mather made his great discovery of the shilling feeding bottle. Or again, if a child a little older, say one or two years, is allowed to eat meat and potatoes at its pleasure, and gets a full allowance of raw fruit or plum pudding, what can be expected but that it should suffer from vomiting and purging? It won't do for those who permit or encourage such an absurd state of things to throw the blame on teething, or the hot weather, and so wash their hands of the matter. There are no figures in the *Statistical Register* or the *Victorian Year Book* to tell us the effect of artificial feeding on infants, but it is certain enough; and that effect on the average child is not shown to be harmless by pointing to great strong children here and there who have never had the breast. Where that is the case, you may be sure that the child got a larger amount of care devoted to its upbringing, than is, or perhaps can be, always the case. The experiment has been made unintentionally in countries where foundling hospitals are common. Let me tell you what was the

experience in two of these hospitals in France. At Rheims it was found that about 64 out of every 100 of the children died within the first year. At Lyons, on the contrary, only about 34 died within the same period. In both cases the infants were sent to the country, care being taken with the Lyons children that they should invariably be given to wet-nurses. The authorities at Rheims, however, did not think it was worth taking so much trouble, and perhaps incurring such expense for the poor foundlings, and so almost twice as many of them perished. I don't want you to suppose that I consider the result is so fatal when a child is brought up artificially at home; but it is certain that children so brought up are exposed to dangers from which the child who gets mother's milk is free. It is not always easy to be sure that cow's milk is of good quality and unadulterated, or to keep it fresh and sound in summer, and it is a troublesome thing to keep those tube-bottles clean. Anyone having proper opportunities, who makes it a rule to put the nose to such bottles between the times of using, will find, much oftener than there is any need for, a distinct sour smell. If there is good and sufficient reason for a child not being nursed by its mother, the use of the bottle may be the best available substitute, and, if so, then the old-fashioned bottle, which has no tube, but is filled and cleaned from the side, is much safer than the one with the cap and tube, which is a boon only to the idle and the careless. Keep the bottle unimpeachably clean; use good cow's milk, fresh twice a day, and diluted with warm water—about an equal quantity, or rather more to begin with; add very little sugar, not more than restores the natural sweetness, and let the child take a sufficient drink for a meal, and have done for a proper interval—not less than an hour and a half or two hours as a rule —and the risks and disadvantages will be reduced to a minimum. If really good fresh milk cannot be got, then the preserved Swiss milk may be used instead, properly diluted. It keeps well, having the one defect of being too sweet, a good deal of sugar being added to thicken and preserve it. Of other artificial foods the best I think is Nestle's food, but neither it nor any other farinaceous food should be given, if milk can be had, till the child is a few months old. Children under two years of age should not get meat; even after that age they may be kept strong and well on milk food, bread, biscuits, and perhaps a little soup occasionally. After a child begins to run about it does not take harm so easily; but the way they are often treated, getting whatever is going at the family table, with perhaps fruit or lollies at any and all times, is often too much for their digestion. The result is much present suffering, perhaps death, and very often the foundation laid of life-long ill-health. If all mothers took thought to the right feeding and clothing of their young children, we should soon find the death-rate among them reduced to one half, or perhaps less.

If this were a lecture altogether on the management of infants,

I might talk at some length of the need of cleanliness, and fresh, pure air ; and of proper clothing, especially the risks attending the exposure of so much of the neck, chest, and limbs, as is often seen even in very young children. Neglect on any or all of these points no doubt entails much suffering and death among children ; but I prefer to insist mainly on careful feeding as the one great safeguard against the chief causes of mortality amongst infants. In connection with it I should like to refer shortly to the practice of giving opening medicine, and especially castor oil, to babies. It may be generally said that those children thrive best who have a slight tendency to constipation. Now, that is a condition which seems to cause great uneasiness to many, indeed to most mothers. However, if children are at all properly fed, it will almost always right itself, and there is not the slightest necessity for having recourse to the castor-oil bottle, or to Steedman's powders, or to some other nostrum, if the bowels don't happen to be moved at least once every day. The exercise of a little patience will give nature an opportunity of putting things to right in its own way ; and I believe that those cases, in which constipation deserving the name has become inveterate in young children, are almost always the result of the persistent use of purgatives without sufficient reason.

This question of the right way to feed infants, has always been a favourite one with me, and I may perhaps have been led to devote an unfair proportion of the time at my disposal to its consideration ; though, after all, it is of such tremendous importance, that it can hardly be too much insisted on. If those who have the care of children would only get so far as to feel that in almost every instance the diarrhœa and similar disorders, which are so common, are really due to negligence, and that it is not an actual necessity that infants should so suffer when teething, then there would be good hope of improvement. That children, when teething require more care than usual is true, but the process of getting teeth is not a disease, though it almost seems by many to be so regarded. Many children get through it without any trouble, and at the worst it need cause only an irritable condition, easily kept within bounds. It is a slow process that of educating a community ; but surely the labours of the Health Society, in the way of diffusing knowledge on this and kindred subjects, must sooner or later bear fruit.

The subject of epidemic diseases and their prevention, has so many points of contact with that of infant mortality, that they might almost be considered together. I have thought it best, however, to refer to it separately, since measures for the reduction of the mortality from contagious diseases are not so completely dependent on individual knowledge and effort for their adoption, as is the case with those we have already considered. Though we are free from some of the severest forms of epidemic diseases, such as small-pox, typhus, yellow fever, and cholera, yet the mortality due to maladies of that class is very great. In the five years

ending 1880, the number of deaths from *measles, scarlatina, diphtheria and croup, whooping-cough, and typhoid fever*, in Melbourne and its suburbs amounted to 3020, or rather more than 11½ per cent. of the total mortality. The death-rate from these five forms of epidemics is also considerably higher than in the rest of the colony, this disproportion between the town and country rates being mainly caused by the excess in the death-rate from measles, scarlatina, and typhoid; the others, viz., diphtheria, including croup and whooping-cough, being about equally prevalent. Now, all these diseases are in one way or another contagious, that is to say, the poison goes from person to person, either directly or indirectly. With measles, scarlet fever, and whooping-cough, there is no room for doubt or difference of opinion, that if any person, child or adult, who has not had these diseases, comes in close contact with some one suffering from any of them, he is very sure to catch it. With diphtheria and typhoid there is not the same agreement of opinion among medical authorities, though most now believe that there is a poison given off from the body in these cases also, which may cause the same disease in healthy individuals, either directly or after a temporary lodgment in the soil or in water. This is the most important matter, that in all epidemic diseases there is a kind of poison given off by the diseased and taken up by the sound, which is the cause of the spread of these maladies from person to person, from house to house, and from town to town, in any community. There are not very many, whose opinion is of great value, who believe that the poisons we are speaking of can arise spontaneously. Everybody believes that if small-pox is not introduced into this country from Europe or India, or some other place where it now exists, we need not be afraid that it will produce itself in some unknown way. Now, it is just the same with the epidemics already firmly rooted among us. If the people of any town, in which no cases of scarlet fever had occurred for a long time, could use the same quarantine regulations that are adopted for the purpose of preventing the introduction of small-pox into the colony by sea, there is no doubt that they might continue to be free from that scourge; or, if by chance a case was introduced, it might be prevented from spreading beyond one or two houses, as was done with small-pox in Sandhurst a few years ago. Supposing, then, that the people of Victoria were clearly convinced of this truth, and could also be brought to see that the loss of life every year, from these common epidemics alone, is a burden too grievous to be borne any longer, it is quite certain that each and all of them might be stamped out. I do not say that the task would be an easy one; but then great results are seldom easy of attainment, and it surely would be no trifling matter to save on the average about 1700 lives every year from the small number of diseases mentioned.*

* From whatever cause, the deaths from these diseases in Victoria have been steadily diminishing of late years, amounting in the years 1876-80 to 2907, 1640, 1631, 1307, and 1108 respectively.

It should be borne in mind, also, that these deaths represent only those which are produced by the direct attack, and give no idea of those cases where there is a kind of recovery; but in which the health is permanently injured, and death follows in a few months or years, really from the scarlet fever, or whatever the original attack had been, though the entry in the registration books very likely does not contain that information. We Britons, who never shall be slaves, and who insist that our houses are castles, have a great objection to any kind of legislation which interferes with the freedom of private persons. Indeed, one might almost think that the liberty to scatter about the seeds of dangerous diseases is a privilege which must not in any way be limited. When scarlet fever was so prevalent and fatal all over the colony, about seven years ago, the Central Board of Health adopted some regulations for the purpose of checking its spread to some extent. Some of these regulations were right and proper, and may possibly have done good, though I doubt much whether, on the whole, they had much effect in preventing the disease from spreading in localities to which it had been accidentally introduced. The reason was, that they erred from want of thoroughness, and from laying down rules which those who issued them must have known would not be obeyed, and which could not be enforced. I refer especially to a regulation to the effect that no inmate of a house, in which there was scarlet fever, should go into any public place after entering the sick room without first making a change of dress. Unless in the case of very conscientious persons, who were also impressed with the risk of conveying the infection, it is certain that the regulation was simply ignored, and there was no way of bringing the offender to book and enforcing a penalty. It was a round-about and utterly inefficient attempt to cut off communication between the patient and the outside public, and, in my opinion, had probably a quite insignificant effect in checking the spread of the disease, even in small towns and villages, where everybody knows everybody else's ailments. I fear we are not ripe for legislative action with reference to epidemics, which would be tolerably efficient, and all on account of the craze we are possessed with about the liberty of the subject.

On the measures required it would serve little purpose to enter in detail; but if public opinion could be roused to a sense of the necessity for action, then I have no doubt that the bugbear which now stands in the way would be pushed aside, and the compulsory isolation of all persons affected with any of these diseases would become law. If in every locality it was enjoined on local boards of health to have some place to be used as a contagious diseases hospital, to which power would be given to the authorities to send the first case or cases occurring, there to be detained till all risk of infection was past, there would be some fair prospect of cutting short an outbreak, of stamping it out in fact, so far as that particular locality was concerned. Nothing less than compulsory isolation of the sick from the

healthy will suffice, and any attempt to accomplish that end in the easy way of the regulation I have spoken of is mere solemn trifling. We have precedents for interfering with individual liberty in the act for making vaccination compulsory, and in our quarantine regulations, which admit of being extended to inland places when there is sufficient reason, as was shown in the small-pox cases at Sandhurst already referred to. I hope, and indeed believe, that the time will come, when both those who make laws, and those who are subject to them, will see that the liberty at present enjoyed of scattering the poisons which produce epidemic diseases, is no right liberty at all, but a misdemeanour, if not a crime, to be checked and punished more efficiently than is yet the case. Till that happy consummation something can be done in the way of sanitary improvements of various kinds, and such measures as the total abolition of cesspools, sufficient supply of pure water, careful supervision of milk supply (a way by which epidemics often spread, to which attention has been directed of late years), will do much. The proper and systematic use of disinfectants is doubtless of great value now, and will become more useful as knowledge spreads and the public conscience is educated more fully than it is at present. A proper system of drainage of towns is a very important requisite, and it is nothing less than a disgrace that some scheme for draining this city and its chief suburbs has not long ago been devised and carried out in part or in whole. In the case of typhoid fever more than any other epidemic might good results be expected to follow. It has been established that that disease is propagated by means of the stools of persons suffering from it. By them the soil or water is contaminated, and by emanations from the soil, or from cesspits or drains, or by the use of water, milk, &c., so contaminated, healthy persons are affected. From my own observations I know that very often such discharges are simply thrown into the gutter, to find their way no one knows whither, but certainly often enough to cause the occurrence of new cases. The free use of disinfectants might reduce the risk to a minimum, but they are expensive and cause trouble. What can people living in narrow lanes and crowded courts do, better than throw the discharges into the channel and perhaps turn on the tap, so that they may be at least washed a little way off?

My intention has been all through this lecture to bring any statements and opinions offered to the test of figures, and I am glad therefore to be able to point out instances in which the execution of drainage works had a very marked effect in reducing the mortality from typhoid fever. An inquiry into the effect of drainage on the amount of typhoid fever in twenty-five towns in England, showed that the death-rate from that disease had been reduced on the average by about 45 per cent., the reduction in several being more than 50 per cent. In the case of only two towns had there been a slight increase, and it was accounted for by imperfect means of discharge, and consequent damming

back of the sewage; and in the other, by the absence of any means of ventilating the drains, so that the sewer gases found their way into houses through the water-closets. In Hamburg, for a few years previous to 1844, there were, of a 1000 deaths from all causes, 48·5 from typhoid. Next year drainage works were begun, and during the time they were being executed, that is from 1845 to 1853, the rate was reduced to 39·5. In the next eight years, to 1861, it was further reduced to 29·9, and again in the years 1862-69, to 22. According to these figures, given on the authority of Professor Virchow of Berlin, and referring to periods of sufficient length, and to a large enough body of population to allow of an average, it appears that, in the old and crowded city of Hamburg, the effect of thorough drainage was gradually to reduce the death-rate from typhoid fever to less than half of what it had been before the works were undertaken. The number of deaths from typhoid fever in Melbourne, which varies greatly in different years, has amounted to 182 per annum, on the average of the 10 years 1871-80. If our death-rate from it could be brought down to half, the saving of 90 lives in the year, most of them young persons and adults in the prime of life, would be no insignificant gain. Mere mortality lists, too, give a very imperfect notion of the loss to the community from the constant presence of such a disease. The 90 deaths prevented might represent 900 or 1000 persons saved from a long and painful illness requiring careful nursing and attention, so that, even from a money point of view, the ignorance or want of thought which makes us go on submitting quietly to this and similar scourges, is, and will some day be generally seen to be, amazing. But just as it is with many of the commoner ailments among children, so is it about epidemics. There is a kind of fatalism in the popular belief, still widely cherished, that since every child must have measles and similar diseases, it may as well have them now as at some future time, and so there is no use in taking precautions. In fact, with all our boasted enlightenment, there are very many who still hold in truth, if not in so many words, with Tennyson's northern farmer, *If I mun doy, I mun doy.* If the dangers ended with the person who wilfully or negligently acquires an attack of one of these contagious diseases, there would be less to say; but then every fresh case is a kind of new centre from which the disease spreads. You may be quite safe so long as scarlet fever is no nearer than the next street, or in an adjacent suburb, but if your next-door neighbour needlessly exposes himself or his children and gets it in his house, your chance of escaping is greatly diminished. Hence the grievous wrong committed by those who, without some distinct necessity, expose themselves to the risk of catching the disease, or conveying the germs, by going between houses which are affected and those which are free from the disease. Visits of inquiry may often be kindly meant to show sympathy if not to give help, but they are just as often due to

mere curiosity, and perhaps the day may not be far distant when such indiscretions will be punishable by law. It has been often said, how much cheaper it is to prevent crime than to punish it, or perhaps vainly attempt to cure it by reforming the criminal; and the same holds good of disease. If any one were to estimate the loss to the people of Victoria from the 1700 deaths, or to Melbourne from its 600, caused by these commoner epidemics alone every year, and by the illness of the far greater number who recover, the cost of unchecked epidemic disease would be found to be so enormous, that the expenditure in trouble and money, required for their total suppression or reduction within fair limits, would seem small by comparison.

Enough for the present however on this subject, whose importance might very well have warranted a much fuller treatment of it. I pass on therefore to consumption or phthisis, the prevalence of which in this colony, and in Melbourne particularly, I had occasion to go carefully into when collecting materials for a report to the Medical Society on that subject. There has been a great deal of loose talk about the death-rate from this disease in Victoria, and the influence of the climate in favouring or checking the occurrence and progress of the disease. I do not wish to enter on any controversial treatment of the question, which would be wholly out of place, but merely to give you some idea of the undue amount of the disease in this city, when compared with the rest of the colony.

In the year 1880,* the number of deaths from consumption in Melbourne and its suburbs amounted to the very high rate of 23·81 for every 10,000 persons living; while in all other parts of the colony, towns and rural districts taken together, it was only 8·91, or a little more than one-third. Of course it is to be expected that more deaths from consumption should occur in the city than in the country; but that the rate should be three times greater, indicates a position of things which is eminently unsatisfactory, and calling for the application of some remedy, if possible. I do not think that the excessively high rate of mortality from phthisis in Melbourne can be fully explained by the number of deaths caused by it in our hospitals and other charitable institutions; nor by the mere aggregation of population, since the metropolitan district as a whole is far from being densely populated, when compared with the cities of the old world; nor by the large number of persons following unhealthy occupations, the disadvantages of which are reduced to a minimum, by the short hours of labour in most of them now. All these no doubt contribute to raise the death-rate, aided further by the introduction of consumptive persons from Europe; but they can scarcely be allowed to explain fully the enormous disproportion just pointed out. It is very likely that many think that little can be done in the way of preventing consumption in a given locality, by other measures

* The population corrected in accordance with the census returns for 1881.

than those which the individual may take for the preservation of his own health. It is supposed that some persons have a constitutional tendency to this disease, which must be guarded against by following some healthy employment, and avoiding exposure to cold. I am far from denying that there is a tendency to this disease in some persons, and that attention to the general health, and the avoidance of exposure to cold and wet may often prevent it from actually breaking out; but it has been clearly shown of late years that the number of deaths from consumption in a town or district can be reduced greatly by the adoption of general sanitary improvements, independent altogether of what each delicate person may do for himself. I refer to the effect of drying the soil by means of a system of underground drainage, and perhaps there is scarcely any single benefit resulting from town drainage which has been more clearly established than this.

In this large and growing city we are yet very much in the condition, as regards drainage facilities, in which we were placed by nature, perhaps a little worse. We have gone on year after year saturating the soil with all sorts of stinking abominations, and keeping it constantly soaking with the water from our Yan Yean reservoir, and it is impossible that we should not suffer from the damp and foulness so engendered. We suffer no doubt in many ways, and, if we do not take heed in time, shall suffer yet more; and I have no doubt that a considerable proportion of our excessive death-rate from consumption is owing to carelessness or false economy on the part of our rulers in leaving this drainage question unsolved. It may seem a strange thing to say, but I believe we should in some respects be better if our water supply were much less copious. An enormous quantity of water is poured into this city, and as there is no sufficient provision for its removal, the subsoil is constantly wet, and so the amount beyond what is sufficient for purposes of cleanliness becomes a source of harm in many ways, no doubt, and certainly by producing a high rate of deaths from consumption, if the experience acquired in America and England applies to us. In 1862, Dr. Bowditch, of Boston, in the United States, directed attention to some interesting facts, which seemed to show that consumption depended for its frequency very much on the amount of moisture in the soil—those, for instance, who lived on a dry and elevated situation being less liable to it than others living in low, marshy situations. His statements, though interesting and suggestive, did not supply very exact proof of his position, and did not attract so much attention as they deserved. I dare say most people dismissed the matter by thinking or saying that it might be true enough, but then everybody could not live well up on the slope of a hill. At any rate, Dr. Bowditch's representations did not suggest practical action on the subject with sufficient clearness, and so did not bear fruit. In England a careful inquiry bearing on this subject was made on behalf of the Privy Council, by Dr. Buchanan, a few years ago. He showed that the death-rate

from consumption in any district was in great part dependant on its elevation, and on the amount of moisture held in the soil. That was only a more exact proving of what had already been stated in America; but he was able also to show that, in many cases where towns had been drained, and the subsoil dried, the mortality from phthisis had been greatly reduced, to about one-half in some cases. An undrained or damp state of the soil being, therefore, fully proved to be injurious to public health, it is properly enough described as a nuisance, which the sanitary authorities in any town or locality might properly be compelled to abate by adopting a proper system of drainage. We may not be very near such an advanced state of practical legislation on this subject, but I think that if public opinion could be properly roused to a sense of the enormity of allowing consumption to be so prevalent in this city, when it might be reduced perhaps by something like one-half, we should soon get beyond the stage of mere empty talk—for the death-rate from consumption is now more than 600 annually, so that the reduction would lead to a saving of something like 300 lives every year. I do not say that drainage is the one sole measure needed to limit the amount of this painful disease among us. Perhaps proper attention to ventilation is as important; but then drainage is an improvement which can with certainty be carried out, and is a mere question of spending money, if there is value to be received for it. Now, I contend that the gain resulting from the saving of life and health by the reduction in the amount of consumption and other diseases, would be large enough to justify an expenditure greater far than would be required for carrying out the needed improvements. As regards ventilation, it is unfortunately the case that an Act of Parliament will never enable everybody to occupy a large, well-constructed house, or compel people to keep the air of their rooms pure and fresh. If either or both of these desirable results could be attained, there wonld be a great improvement in the state of the public health in general, and in no direction with greater certainty than in keeping down the number of deaths from consumption. That has been put beyond doubt long ago, and the sooner people get to despise the fear of draughts as being generally a mere bugbear, the better will it be for themselves and their children. I must content myself, however, with these general remarks on the subject of consumption and its prevention. It may be new to many persons to talk of it being a preventible disease, in the sense of one which might be largely put down by Act of Parliament; but so it is, and we may surely hope that an educated public opinion will one day lead to a choice of rulers wise enough to see their duty in this respect.

This subject of unnecessary disease—for unnecessary it must be, if preventible—is not one which could very well be made amusing; and perhaps you would have good reason for finding fault if I had tried to make it so. It may be, on the other hand, that

I have tried your patience by introducing too large a mixture of figures, and too many moral reflections. Whether that be the case or not, I should like just to sum up shortly the chief results come to, with the hope that some definite impression may be left on your minds of the great amount of suffering and death which might be prevented by the adoption of proper measures on the part of individuals, as well as by the authorities. A few years ago, Mr. John Simon, then medical officer to the Privy Council, referring to the death-rate in England, said : "It seems certain that the deaths which occur in this country are fully a third more numerous than they would be, if our existing knowledge of the chief causes of disease were reasonably well applied throughout the country." Perhaps that estimate might be somewhat high if applied to this colony in general, but I do not think that it is at all exaggerated if we look at Melbourne alone. I believe that it might be possible to reduce the rate of mortality in this city by not less than one-third, representing an annual saving of 1700 or 1800 lives, and an incalculable amount of suffering on the part of those who recover.

I have confined myself to-night to the consideration of three great causes of death, in which a wise application of our knowledge might have a very great effect in preventing disease and death. I have certainly not over-estimated the slaughter of the innocents in saying that, of every 100 children born in this city, not more than 80 are alive at the end of five years. I do not think that any reasonable man or woman can believe that there is any necessity, natural or moral, requiring that 20 children out of 100 should be in their graves before they reach that age, most of the 20, in fact, in their first year, and that many of the survivors live on with broken health, from the same causes which cut off the others permaturely Of these 20 deaths I do not say that one-third are unnecessary, but that at least half might easily be prevented, if infants were properly fed, reasonably clothed, and guarded against the diseases which attack children especially, those, namely, which I mention next. Epidemic diseases of all kinds might be prevented to a great extent by the adoption of care on the part of parents, and the enforcement of strict regulations on the part of the sanitary authorities. They might, indeed, be stamped out altogether, if concerted measures were taken. If whole communities have been found, as in some states of the Union in America, to submit to the restriction of liberty involved in the adoption of a permissive bill or Maine law, surely it is not too much to expect that some day, though not very soon perhaps, some nation will show itself wise enough to submit to the restrictions required for putting a stop to the waste of life from epidemic diseases. It can be done with certainty, and I have sufficient faith in man's wisdom and goodness to believe that it will be done sooner or later, with at least some of the most destructive of these plagues.

Then there is consumption, whose ravages in this city are nothing less than a disgrace. That with our excellent climate, and the necessaries of life abundant and cheap, and in a city which dates almost from yesterday, there should be almost as many deaths from consumption, in proportion to population, as in London, indicates a state of things redounding little to our credit. If attention were given by architects and owners of houses to the proper ventilation of all dwellings, and if the soil were properly dried by means of underground drainage, we might rely confidently on seeing our death-rate from that painful disease reduced by one-third or more. Even if reduced to half what it is now, that rate would still be considerably higher than it is in the rest of the colony, including the large towns of Geelong, Ballarat, and Sandhurst. As with the epidemic diseases, this happy result is attainable, and surely we cannot for ever remain insensible to the greatness of the loss we now calmly submit to.

Let me commend to your sympathy and support the Health Society, which, with very insufficient means, is endeavouring to diffuse information on sanitary matters, information which is greatly needed among all classes, even in this city, whose inhabitants are, perhaps, a little disposed to think themselves far-seeing and practical beyond the average.

OBJECTS OF THE SOCIETY.

1. To create an educated public opinion with regard to sanitary matters in general, by the aid of the Platform, the Press, and other suitable means.

2. To induce and assist people by personal influence, example, and encouragement, to live in accordance with recognized laws whereby health is maintained and disease prevented.

3. To seek the removal of all noxious influences deleterious to the public health, and to influence and facilitate legislation in that direction.

STILLWELL AND CO., PRINTERS, COLLINS STREET EAST.

No. 9—2nd Ed.] [December, 1881.

The Australian Health Society,
MELBOURNE.

SUMMER DISEASES.

I.

OPHTHALMIA.

By J. T. RUDALL, F.R.C.S.

II.

SUNSTROKE.

By JAMES JAMIESON, M.D.

OPHTHALMIA.

In furnishing some notes on Ophthalmia, it is not contemplated to enable non-medical persons to undertake the treatment of the disease without professional aid, for we may say at once that however desirable it might appear, such an object is in reality quite unattainable.

That which does seem both feasible and expedient, is to convey some practical information which may be the means of occasionally preventing an attack or of diminishing its severity, or of enabling a mild one to pass off innocuously; or, which seems of quite equal importance, of causing persons to abstain from using any so-called remedies which are apt to do positive and irremediable mischief, pending the arrival of medical advice. In a brief and popular article like this, it is scarcely possible to escape laying oneself open to more or less of adverse criticism; it is therefore hoped that due allowance will be made by those professional readers who are in a position to judge of the present attempt. The apology for such an endeavour is the fact that repeatedly within the writer's experience not only have the ready means of helping to a cure been omitted, but permanent injury has been done by improper management arising from want of a little simple information on the part of sufferers or their sympathising friends.

"Ophthalmia" means a disease of the eye, but in a limited sense its signification is confined to inflammations of the external coats of

the eye (conjunctiva and cornea), and it is with this restriction that the term will be here employed. The symptoms of ophthalmia vary according to the intensity of the disease, the impressibility of the patient, and the relative degree in which the coats of the eye are affected. Leaving out of view the purulent or suppurative ophthalmia of new-born infants—a disease perfectly amenable to medical treatment, but which is still often fatal to sight—and the specific purulent ophthalmia of adults, we shall give a short description of ordinary ophthalmia or "Blight," as it is often called in this colony.

The disease often begins with a feeling of dryness or soreness, of itching or smarting, and a sensation of grit or sand under the eyelids. Soon the affected eye looks red and perhaps swelled, and there is discharge of tears or mucous or puriform (matter-like) fluid from it. The eyelids are often gummed together on waking in the morning, and there is more or less incapability of bearing light, and indistinctness of sight. These symptoms need not be enlarged upon, as they are generally well-known; but it may be said that early and copious discharge of matter, together with swelling of the lids, especially if they are of a dusky red colour, indicate great severity of the affection. In another class of cases the discharge may be gushes of hot scalding tears, and the most prominent symptom, intolerance of light. In this form the cornea is mainly affected, and may soon become ulcerated. The two forms may be blended in various proportions, and as the remedies for the one typical form are not suited for the other, the appropriate treatment of a given case is sometimes a matter requiring no little discrimination even on the part of an ophthalmic practitioner. As a general rule, we may say that when there is puriform discharge without intolerance of light or aching pain, topical astringents are required; but when there is much intolerance of light and aching, local sedatives or soothing remedies are needed.

As to the causes of ophthalmia, it would be nearly impossible to enumerate all of them. Almost every inflammation may arise from what is called "cold." But heat also would seem to be no uncommon source of the affection we are now considering, especially when that, as often happens, is associated with strong light and dust. A cold wind, particularly in the form of draught, is a frequent cause of ophthalmia; and it is pretty certain that flies and other insects occasionally convey or supply some noxious material which sets up the disease. Several of these causes are not unfrequently combined, and we do not here attempt a complete list even of the exciting causes, or those which finally determine the onset of an attack. Persons who have not completely recovered from former inflammations of the eye are especially prone to recurrences of the same disease.

Prevention and Treatment.—A knowledge of the most frequent causes goes far in helping us as to prevention and treatment of the disease. The use of a pair of cup-shaped blue or London smoke glasses in travelling over dusty roads in hot weather, and the employment of an eye douche or spray producer (using only cold water) after such work as sheep drafting and the like, would doubtless ward off many an attack of ophthalmia. Even a good bathing of the eyes with cold or tepid water would sometimes have the same result. A thick blue veil, though it may keep the face hot, protects the eyes from insects, and to some extent from strong light and dust.

A person suffering from an attack of ophthalmia should abstain from spirits and fermented liquors, should take a dose or two of some mild aperient medicine, and should avoid strong light and the use of either eye. The sympathy between the two eyes is so close, that the employment of the sound eye is very apt to injure the other. The two eyes may be affected at the same time, or consecutively, or one eye may altogether escape. If, in a given case, the more prominent symptoms are matter-like or mucous discharge and weakness of sight, with sticking together of the eyelids, as stated above, astringent applications are probably required. A solution of from two to six grains of powdered alum in each ounce of water, or one grain of sulphate of zinc in an ounce of water, might be generally employed without risk. If the application should disagree, this would soon become apparent. Before going to bed the lower eyelids should be touched with a little sweet oil or fresh lard. The eyes ought to be freed from discharge by bathing with tepid water before using the lotion.

I object to the glass eye-baths, and I much prefer that the lotion should be applied on a bit of soft rag. An emphatic caution must here be given against the use of lotions containing lead, sugar of lead being a very common application for eye diseases; and also against the use of poultices. A third much-abused remedy is nitrate of silver (lunar caustic). Neither of these applications should ever be employed, unless with the sanction of a medical adviser. It has been ascertained that one or two applications of a lead lotion have caused the deposit of an insoluble salt of lead on the cornea, giving rise to permanent and irremovable opacity. Poultices are believed to lead to mischief, by favouring the extension of marginal ulcer and suppuration of the eyeball; and lunar caustic is a sort of two-edged sword, only to be safely wielded by a very skilful hand.

If the eye affection is characterised by severe aching pain, hot tears, and intolerance of light, it is probable that the cornea is mainly involved, and astringent applications are unsuitable. Warm water is a soothing and appropriate remedy; decoction of

poppy heads (strained through flannel) is always safe, and a lotion of belladonna* (three grains of the extract in each ounce of water) would often be useful, and rarely, if ever, harmful.

To sum up, never use lead lotions, never poultice, never drop in nitrate of silver solution. If out of reach of medical advice, use the local remedies (warm water fomentations, poppy decoction, extract of belladonna lotion), among the soothing class; and in the astringent class, weak alum or zinc lotions, according to the indications previously set forth. Anointing the lower eyelids, and the general management, are suitable in each class of cases.

Ophthalmia is very often contagious ; so generally, indeed, that we should always take the precautions necessary to prevent it spreading in this way. Where only one eye is affected, its secretions or discharge, if allowed to come in contact with the sound eye, may set up the same kind of inflammation in it. It is well known that the use of the same sponges, towels, water for bathing, and the like, may communicate the disease to other persons. When ophthalmia arises in public schools, reformatories, or other institutions with numerous inmates, those affected should always be kept apart from the healthy. An instance is known to the writer of a large school in which ophthalmia having attacked some forty or fifty children, these were, on the advice of a high authority, allowed to go into the schoolrooms and playgrounds instead of being isolated ; the consequence was, that the whole school became full of ophthalmia. This, however, happened many years ago, and such a proceeding would not now be sanctioned by any professional authority on eye diseases. But there is reason to believe that, even without contact in the ordinary sense of the term, the air itself may be the means of conveying the infective particles which set up the disease ; therefore, an ample allowance of space for each individual, good ventilation—that is, constant renewal of the air—and perhaps, also, the use of disinfectants, are essential.

---

* Note.—Belladonna is a strong poison, and the solution of the extract might easily be mistaken by an inattentive person for black draught or other dark-coloured medicine. It should be fresh prepared, properly labelled, kept in the dark, and in a place inaccessible to all but those who are aware of its poisonous nature, and are competent to use it safely.

II.

SUNSTROKE.

Deaths from what is called sunstroke are not very common in this country. In the ten years 1869-1878, those registered under that name numbered 201, as many as 45 of them being in the year 1875. The beginning of that year was marked by excessive heat, the reading of the thermometer in the shade at the Melbourne Observatory being the highest recorded in the ten years, rising to 110.4° F. The effects of the heat seem to have been most felt in Melbourne, where 29 out of the 45 fatal cases occurred, the excessiveness of the mortality in the city, in that season, being further shown by the fact that those 29 deaths were nearly half of the ten years' total—viz., 61.

Considerable as the mortality from sunstroke in Melbourne in 1875 may seem, it is small compared with what has been found in some other places. In New York, in the first four days of July, 1872, the number of deaths from the same cause amounted to 34, 68, 43, and 44 respectively, or a total of 189 ; the mortality, in fact, during the week including these days being greater than that of all Victoria for ten years. In spite, therefore, of the great heat often experienced here in summer, it may be said that attacks of sunstroke are not very common; and it may be possible to suggest a reason for this from a consideration of the causes. The popular name *sunstroke* is somewhat misleading, as it conveys the meaning that the attack is produced by the sun's rays striking directly on the body, and especially the head when uncovered. It is true that attacks are sometimes caused in that way; but it is not so with all, perhaps not even with the majority of cases. Other names, supposed to be more descriptive, have been given, such as heat-stroke, heat apoplexy, heat apnœa, heat fever; for the bad effects are due to the heat, and cases, quite similar to those known as sunstroke, occur sometimes in persons staying long in very hot, close places, such as engine-rooms. The heat, generally that of the sun, when it causes an attack such as is here described, seems to affect the body differently in different persons. Sometimes the heart's action fails altogether or becomes very feeble, and with it the breathing, the patient being in a kind of faint. In other cases, the brain is most affected, and a state resembling apoplexy is found, with hot flushed face, heavy breathing, and perhaps complete insensibility. But whatever the symptoms may be, it has been remarked that the temperature of the body is increased by

even 10° F., or more in some cases. It is this unusual heat of the blood which is the main cause of the symptoms, and whatever favours that becomes so far a cause of sunstroke.

The human body is constantly producing heat, and it possesses the quality of regulating its own temperature, so long as it is in health and is not subjected to unfair tests. In hot weather or cold, during work or at rest, therefore, a thermometer properly applied will show the temperature of the blood to vary to an insignificant extent above or below 98° F. If more heat is produced by the consumption of abundant food, and by any kind of exertion, more is given off in the breath and from the skin. In warm weather, and during any kind of violent work or exercise, a large quantity of blood comes to the skin, which perspires freely, the cooling effect being in proportion to the freedom with which the perspiration can escape. But the self-regulating apparatus is not infallible in its working, and sometimes more heat is produced than can be thrown off; and this is most likely to happen when the air is as warm or warmer than the body, and is at the same time moist. The blood may go to the skin, but it is not cooled there, because evaporation goes on slowly in the moist atmosphere; the balance is destroyed, and an attack of heat-stroke may be produced even in a person staying indoors, and perhaps even at night. But if, when the atmosphere is in that condition, a long distance is walked, or hard work done, so that the body makes heat quickly, the disturbance of the balance is even more likely; and the likelihood of harm resulting is still further increased if tight, thick clothing is worn, as that hampers the escape of heat and moisture. That most cases occur during the day and in the open air is simply owing to the fact of the air being cooler, on the average, in the shade and at night. Fatigue by itself makes the liability to an attack greater, as is shown by the frequency of cases in the late afternoon, when the sun is no longer at its hottest, but when the body is exhausted with the day's work. When it is added that food, insufficient in quantity or quality, and a short supply of wholesome drink, have also a bad effect, the list of causes favouring the occurrence of sunstroke is nearly complete; and with a knowledge of the causes we learn also the best means of prevention. And here a peculiarity in our climate may be mentioned, to which we probably owe a comparative freedom from fatal cases of sunstroke—viz., that our hottest weather generally is when there is a dry north wind blowing, which favours evaporation from the skin and keeps the body cool in proportion.

The measures of precaution to be taken during very hot weather may be shortly summed up to this effect. Violent work or exercise should as much as possible be avoided, and at least should not be too long continued, as great fatigue makes an attack more likely.

For the same reason food should be taken regularly, though large indigestible meals are likely to do harm. As regards drink, any strong alcoholic beverages should be strictly avoided; but pure cold water, weak tea, &c., may be used freely, and will never do harm if too large quantities be not hastily gulped down. Light beer might perhaps be mentioned, but unfortunately a wholesome article of that sort is scarcely known in this country, the ordinary kinds of ale, colonial or imported, being far too strong for a summer beverage, and drunk freely in hot weather must often do harm. Suitable clothing is of great importance. The head should of course be covered, but its covering should be light, and should allow moisture to escape freely. The same holds good about all articles of clothing. They should not fit tightly, and should be thin and of open texture, so that the escape of vapour from the skin may be as little interfered with as possible. That is the object to be kept in view, especially by those who have to exert themselves when exposed to the full heat of the sun. The sudden changes of temperature so common in this climate no doubt make many persons, habitually during summer, clothe themselves in a way more suitable for cold weather.

It should be remembered that a genuine attack of sunstroke is very dangerous. Of thirty persons so affected in one day in New York in 1868, six died immediately, and two more the same night. The attack may be a mere fainting fit; but in view of the risk, medical aid should at once be sought, and in the meantime something may be done. It is not always easy, without the help of the thermometer, to tell whether the person is suffering merely from faintness or from actual sunstroke; and therefore stimulants, such as brandy or other alcoholic drinks, are a rather doubtful remedy. In the former case they may do good, while in the latter they may do positive harm. One thing may be used with confidence, and that is the application of cold to the surface. The patient should be laid flat, the clothes loosened or removed, and towels dipped in cold water laid on the chest, or even over the whole body. Rubbing with ice has been found very useful, as it not only cools the skin, and through it the blood, but has an excellent effect in causing the patient to take a deep breath, and in that way it is a powerful stimulant. In the absence of a medical man, there should be caution in administering drugs; and amateur attempts at letting blood in any way may readily hasten the approach of death.

COUNCIL FOR THE YEAR 1881-82.

President:

HIS HONOUR MR. JUSTICE HIGINBOTHAM.

Vice-Presidents:

MRS. JOHN WEBSTER. | JAS. JAMIESON, M.D.

Honorary Treasurer:

WILLIAM CRELLIN, 4 Market Buildings, Collins Street West.

Honorary Secretary:

MRS. G. W. SELBY, 14 Avoca Street, South Yarra.

Librarian:

MRS. DUERDIN.

MRS. F. WILKINSON	LLOYD TAYLER	J. H. HAYDON
MISS ISABELLA NIVEN	A. SUTHERLAND, M.A.	P. MOLONEY, M.D
MISS A. C. MOON	THOMAS BRODRIBB, M.A.	J. P. RYAN, M.D.
HON. R. RAMSAY, M.L.A.	JAMES GILL	C. R. BLACKETT
REV. CHAS. STRONG	F. J. GLADMAN, B.Sc., B.A.	JAS. DUERDIN.

Secretary:

J. G. BURROWS, Stanley Street, Richmond.

OBJECTS OF THE SOCIETY.

1. To create an educated public opinion with regard to sanitary matters in general, by the aid of the Platform, the Press, and other suitable means.

2. To induce and assist people by personal influence, example, and encouragement, to live in accordance with recognised laws, whereby health is maintained and disease prevented.

3. To seek the removal of all noxious influences deleterious to the public health, and to influence and facilitate legislation in that direction.

Members are requested to ensure for the Publications of the Australian Health Society the widest circulation possible.

Copies of this Pamphlet may be obtained Free on application at the Office, 14 Collins Street West.

Subscriptions received by any of the above Officers.

THE COUNCIL WILL GLADLY RECEIVE SUGGESTIONS ON ANY SUBJECT CONNECTED WITH THE OBJECTS OF THE SOCIETY.

No. 10.] [August, 1880.

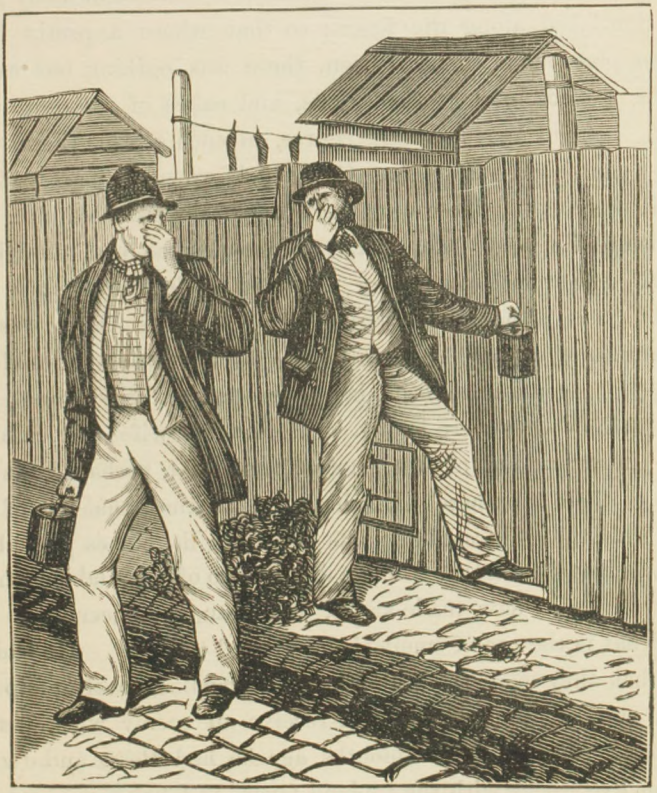
Australian Health Society.

MELBOURNE.

OFFICE: 14 COLLINS STREET WEST.

SECRETARY:—J. G. BURROWS.

A BAD SMELL.



"WHAT a bad smell!" said Carey to his fellow-workman, as they came up the right-of-way on their road home after the day's work was done.

"Pooh!" said the other, holding his nose with his finger and

thumb, "Isn't it horrid? What is the good of smells? What are they made for?"

"Well," said Carey, "that's just what I'd like to know."

Who could wonder that there was a smell! for down the right-of-way there flowed a dirty, slimy drain, all black and foul and filthy; and then, when Carey said good-night to his friend and opened his own back gate, he still had the smell around him; for he stepped into a yard that was just as filthy and bad. A drain started from near the kitchen door, and wandered unevenly towards the gate, but lost itself among the rank, unhealthy grass that flourished along the fence; so that where a pretty little garden plot ought to have been, there was nothing but weeds, with oozy black mud at their roots, and cakes of the same mud baked hard in the sun. Of course, in such a place there were always those bad smells, but Carey had grown so used to them that it was only on these very warm days they troubled him.

Within the house the smells were almost as bad, though he himself never noticed them. For everything was dirty and untidy, and although he earned a good wage, there was no appearance of comfort or cleanliness. You would have wondered how people could have been happy in such a filthy home; and yet somehow they were happy. He and his wife and children were all very fond of one another, and that, perhaps, was the cause of their happiness. But little did he know that one of the most cruel things he could do was to let his little ones play about in that filthy back yard, which a day or two of easy labour on his part would soon have made sweet, and clean, and cheerful.

"What is the use of smells?" he wanted to know. He had no idea that they were there to give him warning to clean up his place, and get himself ready to receive an enemy who was on the road. Why, only six months ago he had Bessy and Joe in bed for five weeks with the typhoid fever, and not two years ago little Katie, his pet, had died from the same disease. The smells had been there long before that to warn him, and save him from his grief, but he had never known the meaning of their warning. This very evening, as he went up the yard, they were still there to

give him notice of a dreadful calamity which was about to happen, but it never occurred to him to do anything but hold his nose, and hope that the hot weather and the smells would soon be over.

"What is the use of smells?" Let me tell you by means of an example. One evening, just about dusk, two friends and I were going across a common near Sydney. At a certain place one of my friends parted from us to strike off to the right. We said good-night, and went on for a few paces till my friend called after me, "Don't forget about the book." I continued to walk on, but looked back to answer, "All right, I shall let you have it next—Oh!" I shouted, and a very big oh! it was, for my arm was pinched as if a horse had had it between its teeth. I stopped instantly, and said to my friend rather sharply, "What is the matter?" But he had no need to tell me, for there just at my feet lay a deep quarry, and a step more would have taken me over. These dangerous places were afterwards all fenced in, but at that time it was a very treacherous spot.

During the week my arm grew blue, and then a great black patch appeared. It was very painful, and I began to think my friend might have given me a gentler warning; but when I read, a morning or two later, how a clergyman had, in the darkness, left the road and driven his buggy over that very place, how his wife was killed on the spot, and his only child died a few hours afterwards in the hospital, I realized more clearly the danger I had run, and went over to see my friend and thank him more heartily than I had at first felt inclined to do, for the kindly pinch that had made my safety certain.

Now, the use of a smell is exactly of the same sort as the use of that pinch. Carey was on the brink of a precipice, and he knew nothing about it. In that foul drain and dirty yard, death lurked as surely as it had waited for me at the bottom of the quarry. I had had my warning pinch, and had stopped just in the nick of time. Carey had had his warning smell, but, poor fellow, had no idea what it meant; never guessed that his home was soon to be bare and desolate.

However, one Saturday his little boy, Dick, being at home

from school, spent the forenoon in searching for a penny he had lost among the grass. He raked and poked among the black mud, and found his penny, but he also found something that he was not in search of. For it is just in these foul-smelling places the fevers lie concealed. The seeds of them are there being nursed ; they only want a little stirring up, and they spring upon their victim when he least expects them.

So Dick next Monday refused his breakfast, and in the afternoon was kept from school ; at six o'clock in the evening came the doctor, and he shook his head. Not the slightest hope ; it was malignant scarlet fever. Poor little Dicky knew nothing of what was going to happen, and wondered why his mother's eyes were so red, and why she buried her head so often in the bedclothes ; but midnight had scarcely ceased chiming when a rapid change began, and in an hour poor Dicky had ceased to wonder or do aught else.

The funeral was over, and the house was settling down to its ordinary ways, though still with its mournful gloom hanging over it, when Bessy sickened, and then John ; and a week later poor Carey followed them both to the cemetery. The frightened father and mother carried Joe away to the seashore, in hopes to save the last of their little flock; but he carried the deadly poison with him, and they brought his body back to be buried beside the rest.

What is the use of a smell ? Its use is to warn people of their ill-kept houses and filthy drains, of rotting heaps and stinking cesspools ; for in these places grow the poisons that give rise to dysentery, and scarlet fever, and measles, and diphtheria, and typhoid fever.

How they get there no one, as yet, can tell. Most likely the seeds come from distant places, carried about by the wind. The seeds that fall on clean and sweet-smelling spots find nothing to grow upon, soon die, and do no harm ; but when they fall on filthy places, where there is a bad smell, they soon take root and grow, and after a time there is a fine crop of disease ready to seize on man, woman, or child.

But the smell that always comes from such places gives us ample warning, so that the duty of a wise man, who wishes to preserve his own life and that of his family and neighbours, is to see that he never has a bad smell about his place, to remove anything that would cause a smell, and do all in his power to have his house, his yard, his right-of-way, and his street all clean, and tidy, and sweet-smelling.

Poor Carey now knows the use of a smell. Poor fellow ! He sometimes sighs and says he wishes he had known it before.

Walker, May and Co., Printers, 9 Mackillop Street, Melbourne.

THE

Australian Health Society,

MELBOURNE.

Preservation of the Teeth.

It is mainly owing to want of daily personal care and cleanliness that so many children have unhealthy and unsightly teeth, and lose them early in life. Disfigurement, indistinct articulation, tainted breath, face-ache, and, worse than all, imperfect digestion, are results of defective dentition, which might have been prevented by early care and timely recourse to the dentist.

The two great causes of decay are the formation of tartar by the secretions of the mouth, mixed with food, drying on the teeth, and the lodgment between the teeth of particles of food, which ferment. They produce acids, which eat a hole in the enamel, and penetrate through the tooth-substance to the nerve, which is the life of the tooth and the seat of pain. As we incur both these risks at every meal, the teeth should be brushed after eating, and those persons whose avocations prevent this, should wash the mouth out thoroughly with water and use a quill tooth-pick, not neglecting to brush the teeth night and morning. The destroying action of the acids is rapid, particularly on teeth thinly coated with enamel; and, as each decayed tooth will infect its neighbours, there is practically no end to the mischief done by one little hole

allowed to go unstopped. How fatally rapid may be the result of such neglect is seen in the fact that many young people have scarcely one sound serviceable tooth left when cutting the wisdom teeth, which should complete the set of masticators provided for the service of a life-time.

Children should, at a very early age, be taught to include the teeth in their daily ablutions, and parents should superintend the practice until it becomes habitual. The brush used should be elastic and moderately hard, and must be thoroughly rinsed after use. The teeth should be smartly brushed on both the *inner* and outer side, *the brush being carried up and down* as well as across. A square-shaped brush, with serrated bristles, will be found best for the inner side of the teeth. Tepid water should be used in preference to cold, and all prepared tooth-powders and pastes avoided. Occasionally, a little unscented soap may be used, followed by the application of precipitated chalk, which offers sufficient resistance to polish the enamel without scratching it, and, being an alkali, counteracts the acids, which are the active agents of decay. Camphorated chalk may be used by adults, and has the advantage of being a good breath disinfectant. Unfortunately, parents rarely insist on the daily cleansing, until the teeth show signs of neglect; and by that time irreparable harm is done. Even then, they think a visit to the dentist will set matters right, and when the visit is paid, extraction of some teeth, stopping of others, and scaling of all is found necessary. The necessity for scaling is, of itself, proof of disgraceful neglect. First, the discolouration, next the slight coating, and then the hard deposit of tartar, were allowed to come unchecked! Wherever practicable, children should pay regular visits to a competent dentist for inspection. This is especially necessary between the ages of seven and thirteen, when the way must be cleared for the second teeth to take their proper places, thus preventing malformation, and ensuring symmetry to the jaw, and when the new permanent teeth require watching for the first signs of decay. This preventive dentistry will be found cheaper, and attended by far less suffering, than the

old plan of waiting till pain drove us to undergo operations which should never have been necessary.

A cause of bad teeth, which is but little recognised by parents, is an insufficiency of tooth-forming substances in the food. Milk, eggs, fish, barley, fruits, and vegetables (especially beans) contain them; while oatmeal porridge and brown bread are so rich in phosphates that they should be deemed indispensable to the diet. Failing a sufficient supply of such materials, the teeth, instead of being of dense texture and thickly coated with enamel, will be fragile and thinly coated. Such teeth are unable to resist the action of acids for a reasonable time, or to withstand a shock or extremes of temperature without cracking; nor will they perform their office of mastication efficiently, while they are liable to succumb altogether to a passing attack of illness. Their possessor generally bolts his food, or masticates more on one side of the mouth than on the other; either practice resulting in inaction of the teeth, and consequently in their destruction by the accumulation of tartar.

Dangerous practices which may be here noticed are using pins or other metal tooth-picks; cracking fruit-stones, nuts, and hard lollies, and biting silk or thread. Acids, hot foods, hot drinks and iced drinks (especially if taken in quick succession) are injurious. Sugar does not hurt sound teeth, although it greatly hastens the decay of those already attacked. Opinions differ as to the effect of smoking, but it may be safely affirmed that the habit does not injure teeth which are well cared for.

The importance of thorough mastication cannot be over-estimated, for on the efficient performance of this function much of our health, vigour, and comfort depends. Since teeth influence digestion, and complete digestion is necessary to health, it follows that defective mastication is the first cause of many diseases resulting from a derangement of the digestive organs. The process of digestion is such that unless the food be thoroughly torn apart, bruised, and ground down, the saliva cannot mix sufficiently with it to dissolve the starchy matter it contains. The other constituents

of food are acted upon by the gastric juices in the stomach, but the starchy matters are dependent on the saliva in the mouth for digestion. Food undigested cannot be absorbed into the blood, but becomes injurious waste matter. It is obvious that if the body be continually supplied imperfectly with an important element of nutrition, its tissues must suffer and health be impaired. The starchy matters are not contained in animal, but in vegetable, food; therefore, it should be remembered that complete unhurried mastication is far more essential for vegetables and grain-products than for meat. This is contrary to the popular notion, but may be illustrated by the example of a carnivorous animal, which bolts its food with impunity, while a graminivorous animal—such as a cow—devotes a long time to feeding, and needs to chew its food twice.

In order to save much future suffering, trouble, and expense, parents are earnestly advised not to neglect the conservation of their children's teeth; and it must be borne in mind that, when the children cannot be taken to a dentist, the conservation entirely depends on the daily vigilance of the parents.

A. C. M.

OBJECTS OF THE AUSTRALIAN HEALTH SOCIETY.

1. To create an educated public opinion with regard to sanitary matters in general, by the aid of the platform, the press, and other suitable means.
2. To induce and assist people by personal influence, example, and encouragement, to live in accordance with recognised laws whereby health is maintained and disease prevented.
3. To seek the removal of all noxious influences deleterious to the public health, and to influence and facilitate legislation in that direction.

Office: 14 Collins Street West.

SECRETARY:—J. G. BURROWS.

M'Carron, Bird and Co., Printers, 37 Flinders Lane West, Melbourne.

THE

INFECTIOUS AND CONTAGIOUS DISEASES OF CHILDREN.

INSTRUCTIONS REGARDING THE EARLY SYMPTOMS.

For the information and guidance of Heads of Families, School Teachers, and others.

*** The following Paper is reprinted, by direction of the Central Board of Health, from an article in "The Practitioner" for April 1880, entitled "Instructions regarding the early symptoms of the Infectious and Contagious Diseases of Children, prepared by Dr. Delpech for the use of Teachers of Infant and Elementary Schools in the Department of the Seine;" Abridged and Translated by J. Laurence Hamilton, Esq., M.R.C.S., &c.

"The Head Teacher or director of the school is urged to give immediate personal attention to any child in the school who may appear ill, or who complains of feeling unwell. In such a case the Teacher should specially note the presence of one or more of the following signs :—

1. Increased temperature of the child's body, discovered by the Teacher placing his hand upon the child's skin, particularly on the chest, armpit, face, or forehead ; *
2. Quickening of the pulse, as measured by the aid of a watch, together with hardness of beat ;
3. Shivering ; increased or exaggerated sweating, not being the result of exercise, &c. ;
4. Great thirst, with loss of appetite ;
5. Tongue more or less white, dry, or red ;
6. A flushed or pallid face ;
7. Increased or diminished brilliancy of the eye ;
8. General weariness and indisposition ; sense of fatigue, with aching in the loins ; headache ; drowsiness or excitement ; delirium.

* It would have been an improvement, perhaps, if every school were required to have a clinical thermometer as part of its appointments, and that the Teacher, finding a temperature taken in the armpit of 100° F. or more, should be directed to have such a child medically examined.—*J. L. Hamilton.*

The majority of the above-named symptoms will almost invariably indicate the presence of a febrile state.

Any child kept at home away from school for a week or more by its parents should, before returning to its school, bring a certificate of health, signed by a duly qualified medical practitioner.

INFECTIOUS FEBRILE DISEASES.

A.—SMALL-POX is rarely found in those schools where vaccination is enforced, as the majority of vaccinated children have not yet lost the protective influence of primary vaccination. Whenever possible, the Teacher should have all the children over ten years re-vaccinated, especially in times of epidemic small-pox.* The popular assertion that during epidemics of small-pox re-vaccination tends further to develop small-pox is absolutely false.

Small-pox sets in with fever, vomiting, and pains in the loins. After not less than two days, but most frequently on the third day of the illness, there appears, commencing on the face, an eruption of raised spots, more or less numerous, which pass later into pimples or pustules, having a depressed or navel-like centre. These spots terminate in scabs, which should have completely disappeared before the child be allowed to return to school. Before re-admission to the school the child should have had two or three baths.

B.—CHICKEN-POX is a mild disease, occasionally preceded by fever. It is characterised by successive crops of *blebs*, preceded by red-colored spots, each new crop being apt to appear towards evening, and is generally accompanied with some accession of slight fever. Chicken-pox is characterised by pea-sized *blebs*, or blisters, filled with transparent watery liquid, which soon becomes thick, muddy, or bloody, and terminates with scabs. Where the spots on the body are neither numerous nor well marked, the eruption is invariably observed among the hair of the head.

C.—MEASLES is ushered in with general indisposition, fever, neezing, weeping and red eyes, loud noisy cough; occasionally there nay be bleeding from the nose and passing diarrhœa. After three or our days' illness, sometimes sooner, an eruption shows itself, first on he chin and face, in small irregular rose-red spots, slightly elevated, which soon spread over the surface of the body, leaving more or less ale irregular patches of skin unattacked. *The complaint is highly ontagious.*

Children with measles, when *kept at home* and not exposed to the hance of catching cold, generally do well.

D.—SCARLET FEVER commences with extreme general indisposition, high fever, a dry burning skin, pains about the throat, and vomiting. Generally towards the end of the first day's illness, some-

* The English regulations as to public vaccination state fifteen years as the age for re-vaccination, or twelve years when there is immediate danger of small-pox.—*J. L. H.*

times even at the very outset, a child, but a few minutes before in apparent good health, presents itself with a raspberry-red blush or rash, which may either cover the body completely, or else appear here and there in patches. The face, the interior of the thighs, the groins, and the neighborhood of the joints are favored situations for the rash. At first glance the eruption looks uniform, but a closer examination discloses innumerable round points, some of which are more pointed and higher than their neighbors, and often run into minute bladders about the size of a pin's head.

Sometimes the disease is singularly mild; sometimes exceedingly virulent. Sometimes it is so fugacious that its presence is not suspected until the skin begins to peel, a process notably observed on the hands and feet. Frequently the joints, particularly the wrists, suffer pains analogous to rheumatism.

Scarlet fever *is an extremely contagious disease*, and while, after ten days' isolation and the use of a bath at the close, a child convalescent from measles may be allowed to associate with others, not less than six weeks' isolation is required to exhaust the communicability of scarlet fever.

E.—MUMPS may come on suddenly, or else be preceded by a few days of general indisposition, which now and then amounts to high fever. A feeling about the jaws of stiffness is soon followed by swelling, often very bulky, and more or less tense. The swelling is apt to extend either at the back of the lower jaw or underneath it. The swelling contains no fluid; dental pain is absent. Generally first one side of the jaw is attacked, and then the other; it is rare for both sides to suffer simultaneously. Not uncommonly similar swellings burst out in other localities of the body, the genital organs being most liable to seizure.

F.—ULCERATIVE STOMATITIS is a contagious disease. Its invasion may be preceded by general indisposition, usually unattended with fever. Greyish bleeding ulcers, tending to spread in extent and depth, attacks the edge of the gums, the inner side of the cheeks and lips, and the roof of the hard and soft palates, accompanied with an extremely fetid breath.

G.—DIPHTHERITIC SORE-THROAT or CROUP is eminently contagious. Its approach is insidious, often commencing with some difficulty in swallowing, and slight hoarseness. Possibly the glands at the back of the angle of the jaw swell, which in serious cases extends to the neighboring structures of the neck. At other times these symptoms occur subsequent to a swelling about the nostrils, with more or less copious discharge, indicating that the nasal membranes have been seized prior to those in the throat. Cough, if any, is faint and muffled; the voice is hoarse and smothered.

With a spoon press down the child's tongue, and note if there be any appearance about the tonsils and the soft palate of a skin or leather-like membrane, which may be greyish or whitish, or even blackened by

vitiated blood. This false membrane, which characterises the disease, is prone to spread over the neighboring parts, notably reaching downwards into the windpipe.

This diphtheritic croup must not be confounded with false or spasmodic croup.

In *false croup* the child has generally been perfectly well during the day preceding the night on which it suddenly wakes up all at once ill with alarming signs of threatening suffocation, attended with loud clamorous coughing and a clear voice. Here no false membrane is present in the throat, nor are the glands about the jaw swollen.

False croup is generally mild, and it is not contagious.

H.—DYSENTERY may be contagious. It is distinguished by a frequent, sometimes a continual desire to seek relief on the closet, where, in spite even of severe straining, the child succeeds in passing only a little slime or mucus, often colored by small quantities of blood. General indisposition and colicky pains in the belly soon compel the child with dysentery to leave the school.

To stop infection, no child suffering with dysentery should be allowed to use the general school water or other closet.

Dysentery is not to be confounded with diarrhœa, where there are more or less frequent liquid motions.

I.—TYPHOID FEVER is infectious, and is apt to set in or to sneak in with ill-defined signs. For some days the child may have lost its appetite and its general energy; it is fatigued and "knocked-up." Then the fever is next ushered in with great pain, noises and confusion in the head; the hearing becomes obtuse; giddiness occurs, with great difficulty to keep any upright position. There is often bleeding from the nose, generally followed up by colicky pains in and swelling of the belly, associated with some diarrhœa. The skin is dry, parched, and hot; the tongue fouled, with red tip and sides. However, the child, before this, has been compelled, by its state of indisposition, to cease attending the school.

J.—HOOPING-COUGH is eminently contagious. The child may be noticed to have had, during one or more weeks, occasional but violent fits of coughing, which are most frequent during the night. If no complication be present, there is practically no cough between these spasmodic attacks. Usually a short feeling of general indisposition precedes the attack, during which the child in vain struggles to suppress the cough about to burst, when all at once the trunk and frame are subjected to a violent series of successive throbs, almost threatening suffocation. At this epoch a few deep drawings-in of the breath are followed by a whistling and almost convulsive inspiration, which may again be succeeded by boisterous coughing. Then, in most cases, after a brief moment's repose, a second but a less severe and a shorter onslaught than the first is noticed. Lastly, the fit is terminated by the child's partly spitting and partly swallowing some thick mucus, often at the same time vomiting up any matter present in the stomach.

The time occupied by these seizures to their termination by expectoration varies from sixteen seconds to a couple of minutes. Owing to the grave and fatal complications often associated even with apparently mild cases of hooping-cough, most especially in very young children, immediate isolation of the sufferer from its school-fellows is necessary.

OPHTHALMIA.

Both catarrhal and purulent ophthalmia are highly contagious at all ages, but especially in very young children, and the last-named disease may cause the loss of one or both eyes.

The eyes and their lids become red, swollen, and bathed with a discharge often more or less offensive.

CONTAGIOUS PARASITIC DISEASES.

A.—ITCH is characterised by the appearance of minute transparent vesicles, which occasion the most lively itching, particularly at night-time. The spaces between the toes and fingers and the wrists are most liable to invasion. The child's frequent scratchings soon converts the rash into scabs, in which condition the disease will frequently first be noticed by the Teacher.

The itch is caused by an insect (*Acarus scabei* or *Sarcoptes*), which is nocturnal in its habits and movements.

Though highly contagious, the itch can be cured in a few hours.

B.—CRUSTED RINGWORM, or *Tinea favosa*, is caused by a vegetable parasite frequenting the scalp, although it may visit other parts of the body which are covered with hair or down. The hair becomes thin and fragile, with loss of its original color; then follow irregular unequal puckered crust-like yellowish scabs, which may be single or may cover the entire scalp. The scabby flakes in drying and dying crumble to minute fragments, and thus, as dust, propagate and disseminate the disease. Itching being frequent in scalp ringworm, the child's scratching increases the destruction and pulverisation of the scab, and thus increases the chances of contagion to others.

The heads of such children as suffer from the disease have a peculiar fetid odour, resembling that of a cat's urine.

Till quite cured, every child suffering from *favus* (ringworm) should be separated from its school-fellows, and only be re-admitted on presenting a proper medical certificate.

B.—COMMON RINGWORM, or *Tinea tonsurans*, is very contagious, making itself manifest by the hair of the head becoming thinner, more fragile, less colored than the surrounding hairs. The affected hairs are apt to turn reddish or ashy-grey; they seem as if evenly and artificially clipped off at a distance of say $\frac{1}{4}$ to $\frac{1}{8}$ of an inch above the level of the outer layer of the skin. The surface of the patches is rough, irregular, shaggy, covered with a greyish scurfy powder, of a slightly bluish tinge. The diseased places may be one or more in

number; the form is circular, varying in size from that of a silver florin to a crown piece. By the fusing together of several of such parasitically affected localities, the greater portion of the scalp may become affected.

C.—RINGWORM WITH BALDNESS OF SCALP (*Tinea decalvans*).—This contagious complaint declares itself by the presence of defined patches, naked of all traces of hair, having a glistening ivory whiteness not unlike a scar without depression. Their size varies from that of a silver threepenny piece upwards.

Previous to the loss of hair there may have been considerable itching. The eyelids and other parts of the body covered with hair or down may also suffer from the vegetable parasite causing the disease (*Microsporon Audouin*). In children and adults with thick hair this disease may remain long undetected.

Each child in schools should have its separate brush and comb. Barbers, by using the same brushes and combs in common for all their customers of all ages, are thereby apt to distribute these hair and skin diseases.*

DISEASES CONTAGIOUS FROM SYMPATHY OR IMITATION.

A.—FITS, or FALLING SICKNESS.—Epilepsy is marked by fits which occur at intervals of various lengths even in the same individual. During the intervals between the fits the health may be perfect.

There is a milder form of epilepsy, an epileptic giddiness or vertigo, differing from the true epilepsy with severe convulsive fits, as if the two were distinct diseases rather than higher and lower terms in the same morbid progression.

Epileptic giddiness consists in a sudden loss of consciousness, the child remaining in the last position assumed immediately previous to the attack. Thus, if the seizure should arrive during, say, a meal, the raised hand armed with food would, during the seizure, remain in that particular position. The face is pallid, and sometimes agitated by slight movements. For a space of time ranging from a few seconds to a couple of minutes the child's brain power seems to remain as if suspended, inert and inactive. Then, without any knowledge of that which has just occurred, the arrested action is completed, of, say, introducing the food into the mouth. At other times this stage of unconsciousness may be succeeded by one of drowsiness or of puzzled astonishment lasting for several minutes.

Again, others afflicted with epileptic giddiness, may, during the fit, commit unconsciously some act, after which they will return to their normal habits; whilst yet, in a further class, the child falls to the ground without convulsion, and in a few minutes afterwards gets up without noticing the fall which has just taken place.

* The subject of *lice* is not referred to in M. Delpech's report.—*J. L. H.*

On the other hand, *true epilepsy* occurs suddenly, with or without warning. All at once the child becomes pallid, and falls to the ground unconscious, with or without giving a shriek. His body becomes rigid, but agitated with violent convulsive movements affecting the trunk and limbs, and at times resulting in severe self-wounding. The face turns to a ghastly bluish-red color, the features become distorted and agitated with convulsive movements, and the teeth are brought together with forcible jerking apposition (grinding, gnashing). From the closed mouth then escapes an abundance of saliva, which sometimes dribbles away, sometimes forms a foam about the lips. In these true fits the tongue is liable to be lacerated by the teeth, when, of course, the foam will be bloody.

The duration of the fit may be from thirty to forty seconds, or even for several minutes, and even for a longer period.

As the fit subsides, the rigidity of the body diminishes, the face becomes again pallid; noisy snoring accompanies deep drowsiness, which may continue minutes or hours. The child then wakes up perfectly ignorant of what has just transpired, but astonished, puzzled, weary, and worn out with over-fatigue, and in pain from various bruises caused by his fall or by his struggles during the seizure.

B.—HYSTERIA (*Nervous attacks*) would, as a rule, attack only the elder pupils of the school, for it rarely occurs till a later period of life. It is apt, as epilepsy, to show itself in a convulsive form, but the convulsion differs from epilepsy by the greater extent of the movements. Moreover, the general condition of the person affected differs much; there may be cries and tears, and usually there is no loss of consciousness, or it is incomplete.

It is important to separate children suffering from epileptic or hysterical convulsions from healthy children. Arch imitators like children are notoriously prone to become influenced, impressed, and injured by witnessing as spectators convulsive attacks which later they are apt to mimic. Their mere sympathetic *fright* may induce corresponding change of the nervous system in young and previously perfectly healthy children.

C.—ST. VITUS'S DANCE (*Chorea*); GRIMACES.—For similar reasons, a child affected with St. Vitus's Dance should not be allowed to attend school till quite cured of its complaints; and children liable to these involuntary hideous grimaces (a form of St. Vitus's Dance), which are sometimes acquired in very early childhood, should also be excluded. Previously sound children will pick up facial tricks, and although the adoption of such habits does not interfere with the general bill of health, yet in later life these acquired grimaces may be attended with serious consequences and drawbacks."

(Republished by order of the Board.)

T. R. WILSON,
Secretary.

CENTRAL BOARD OF HEALTH,
Melbourne, 17th January 1881.

By Authority: ROBT. S. BRAIN, Acting Government Printer, Melbourne.

No. 13.] [July, 1881.

THE

Australian Health Society,

MELBOURNE.

SMALL-POX & VACCINATION.

By JAMES P. RYAN

(Chevalier of the Legion of Honour).

Only those who have been eye-witnesses of small-pox as it occurs in countries where vaccination is not enforced can have any idea of the loathsomeness and terrible fatality of that disease, or can form any just estimate of the boon conferred upon humanity by Jenner's great discovery. Up to the end of the last century small-pox was always amongst us, but at tolerably regular intervals, like a great wave, it swept over the populations of Europe, carrying off its victims by the thousand, and leaving behind it the ineffaceable records of its progress.

In those days out of every one hundred persons who contracted the disease from thirty to forty or more died, and the majority of those who survived the ordeal bore with them for the rest of their lives the marks of the struggle through which they had passed.

At the present time, of one hundred efficiently vaccinated persons who are attacked by small-pox, only five or six die, and a majority of the remainder have a mild attack of the disease, and escape without being marked.

Vaccination, discovered by Dr. Jenner towards the end of the last century (*Inquiry into the Causes and Effects of the Variolæ Vaccinicæ*, published in 1798), has worked this wondrous change. It may be defined as the process by which vaccinia, or cow-pox, is introduced into the human system, with the object of protecting it from an attack of small-pox. Vaccinia manifests itself in the teats and udder of the cow in the form of round vesicles, containing a clear fluid, called lymph. It was recognised that persons engaged in milking frequently contracted this disease (a very mild one) and that they seldom took small-pox. Jenner, taking this as his starting point, made a series of experiments, extending over many years. With the point of a lancet he introduced some of this lymph under the skin of human beings, and found that a vesicle similar to the one from which he had taken it resulted. With lymph from this secondary vesicle he vaccinated others, and found that the results were still the same.

In time he ceased taking matter direct from the cow, and continued his vaccinations with humanised lymph. So palpable were the results produced by his great discovery that before his death vaccination was being practised in every civilised country in the world.

The advantages of efficient vaccination are :—

First. In a large majority of cases it confers complete protection from small-pox.

Second. The minority who are still susceptible to the influence of the disease take it in so mild a form that they are seldom marked, and more seldom die of it.

Third. It has materially diminished the epidemic influence of small-pox.

Does the vaccine virus deteriorate in transmission through human bodies ? In other words, is vaccine lymph transmitted through an unbroken chain of human beings as effectual in the protection it confers as lymph taken direct from the cow ? On this point there is some difference of opinion amongst medical authorities, and quite recently some strong evidence has been brought forward in favour of the view that vaccine lymph transmitted through a series of generations of human beings does not

confer such complete protection as lymph taken direct from the cow.

Infancy, between the second and sixth months, is for many reasons the most favourable period of life for the successful performance of vaccination, although it may be safely done immediately after birth, or in extreme old age. The lymph employed should be clear, and free from admixture with blood and other impurities; and four perfect vesicles, at least, should be produced, because the protective power of the vaccination seems to correspond in some degree with the number and perfection of the resulting marks. I need scarcely say that when the vesicles are in process of formation, the greatest care must be taken that their growth be not interfered with by the rubbing of the clothes or otherwise, and the crusts or scales which subsequently form should be allowed to drop off, and should not be forcibly removed, as is sometimes done.

A few even of those who have been efficiently vaccinated will, if exposed to contagion, contract small-pox. This fact has led to the practice of re-vaccination, and experience confirms its utility.

The question is, under what circumstances should it be performed?

When an infant has been unsuccessfully vaccinated—*i.e.*, where no scar is visible, or only irregular or indistinct scars exist—it should be done without delay. Where one well-defined mark is left the operation may be deferred until near puberty, at which time all should be re-vaccinated. After this period it is advisable, though probably in a large number of cases not necessary, to have it repeated every five or seven years, and during the prevalence of an epidemic all who are exposed to contagion, except children who possess two or more perfect marks, should be submitted to the operation.

Is it possible to communicate through the vaccine virus other diseases, such as skin affections, cancer, syphilis, scrofula?

Mr. Marson, who performed over 50,000 vaccinations, says:—"I have never seen other diseases so communicated." And the large experience of Dr. West, Sir W. Jenner, and Sir James Paget, led them to a similar conclusion.

In France and Germany, Cullerier, Taupin, Heim, and others, made a series of experiments to determine the question. They took lymph from diseased children, and used it in the vaccination of healthy ones, but in no case did they succeed in propagating anything except vaccinia. Alleged cases, and even epidemics, of such transmissions of disease have been from time to time brought forward, but in none of them has the evidence been sufficiently clear to warrant us in accepting them as proved.

Diseases may have been propagated through careless vaccination —*i.e.*, vaccinating from a sore that was not a true vaccine vesicle, or from using lymph contaminated with blood or other impurities— but until other and more conclusive evidence is brought forward, we may safely rest in the belief that cow-pox, and cow-pox only, is transmitted in carefully and efficiently performed vaccination.

OBJECTS OF THE AUSTRALIAN HEALTH SOCIETY.

1. To create an educated public opinion with regard to sanitary matters in general, by the aid of the platform, the press, and other suitable means.
2. To induce and assist people by personal influence, example, and encouragement, to live in accordance with recognised laws whereby health is maintained and disease prevented.
3. To seek the removal of all noxious influences deleterious to the public health, and to influence and facilitate legislation in that direction.

Office: 14 Collins Street West.

SECRETARY:—J. G. BURROWS.

Mason, Firth & M'Cutcheon, Printers, Melbourne.

The Sanitary Alphabet.

A s soon as you're up, shake blankets and sheet ;
B etter be without shoes than sit with wet feet ;
C hildren, if healthy, are active, not still ;
D amp beds and damp clothes will both make you ill.
E at slowly, and always chew your food well ;
F reshen the air in the house where you dwell.
G arments must never be made to be tight ;
H omes will be healthy if airy and light.
I f you wish to be well, as you do I've no doubt,
J ust open the windows before you go out ;
K eep your rooms always tidy and clean,
L et dust on the furniture never be seen.
M uch illness is caused by the want of pure air,
N ow to open your windows be ever your care ;
O ld rags and old rubbish should never be kept,
P eople should see that their floors are well swept.
Q uick movements in children are healthy and right ;
R emember the young cannot thrive without light.
S oap and rough towels are good for the skin ;
T emperance favours the body within.
U se your nose to find out if there be a bad drain,
V ery sad are the fevers that come in its train.
W alk as much as you can without feeling fatigue,
X erxes could walk for full many a league.
Y our health is your wealth, which your wisdom must keep ;
Z eal will help a good cause, and the good you will reap.

AUSTRALIAN HEALTH SOCIETY.

Melbourne, September, 1881.

AUSTRALIAN HEALTH SOCIETY.

SIXTH ANNUAL REPORT

READ AT THE

General Meeting of the Society,

HELD AT THE

TOWN HALL, MELBOURNE,

ON

23RD SEPTEMBER, 1881.

"EXAMPLE IS BETTER THAN PRECEPT."

Office:

14 COLLINS STREET WEST, MELBOURNE.

MELBOURNE:

SANDS & MCDOUGALL, PRINTERS, COLLINS STREET WEST.

MDCCCLXXXI.

OBJECTS OF THE SOCIETY.

1. To create an educated public opinion with regard to sanitary matters in general, by the aid of the platform, the press, and other suitable means.

2. To induce and assist people by personal influence, example, and encouragement, to live in accordance with recognised laws whereby health is maintained and disease prevented.

3. To seek the removal of all noxious influences deleterious to the public health, and to influence and facilitate legislation in that direction.

COUNCIL FOR THE YEAR 1881-82.

President:

HIS HONOUR MR. JUSTICE HIGINBOTHAM.

Vice-Presidents:

MRS. JOHN WEBSTER. | JAS. JAMIESON, M.D.

Honorary Treasurer:

WILLIAM CRELLIN, 4 Market Buildings, Collins Street West.

Honorary Secretary:

MRS. G. W. SELBY, 14 Avoca Street, South Yarra.

Librarian:

MRS. DUERDIN.

MRS. F. WILKINSON.	LLOYD TAYLER.	J. H. HAYDON.
MISS ISABELLA NIVEN.	A. SUTHERLAND, M.A.	P. MOLONEY, M.D.
MISS A. C. MOON.	THOMAS BRODRIBB, M.A.	J. P. RYAN, M.D.
HON. R. RAMSAY, M.L.A.	JAMES GILL.	C. R. BLACKETT.
REV. CHAS. STRONG.	F. J. GLADMAN, B.Sc., B.A.	JAS. DUERDIN.

Secretary:

J. G. BURROWS, Stanley Street, Richmond.

The Council will gladly receive suggestions on any subject connected with the objects of the Society.

CONSTITUTION

As adopted at the General Meeting held on 23rd March, 1877.

Objects.

1. To create an educated public opinion with regard to sanitary matters in general, by the aid of the platform, the press, and other suitable means.

2. To induce and assist people, by personal influence, example, and encouragement, to live in accordance with recognised laws whereby health is maintained and disease prevented.

3. To seek the removal of all noxious influences deleterious to the public health, and to influence and facilitate legislation in that direction.

Membership.

4. All persons subscribing not less than Five Shillings per annum to the funds of the Society to be Members.

Council.

5. The business of the Society shall be managed by a Council of twenty Members, including a President, Vice-Presidents, Honorary Treasurer, and Honorary Secretary.

Retirement of Council.

6. The whole Council shall retire annually, and be eligible for re-election at the Annual Meeting.

Annual Meeting.

7. The Annual Meeting shall be held in September, to receive the Council's Report and Balance-Sheet, and to elect the Officers for the ensuing year.

Meetings of Council.

8. The Council shall meet at least monthly; five to form a quorum.

Special General Meetings.

9. A Special Meeting of the Society may be called by the President, or by the Council, and shall be so called upon a requisition in writing of nine Members.

Formation of Branches.

10. The Council shall encourage the formation of Branch Societies in this and the neighbouring Colonies.

Sub-Committees.

11. The Council may appoint Sub-Committees to attend to special branches of the work of the Society: all Members of the Society to be eligible to serve on such Committees.

Vacancy in Council.

12. Any vacancy in the Council occurring before the Annual Meeting may be filled by the Council, provided that the candidate is a Member of the Society, and shall have been nominated at a previous meeting of Council.

Failure of Attendance.

13. A Member of Council who shall fail to attend for four consecutive monthly meetings, without offering a satisfactory explanation of such absence, shall cease to be a Councillor; and the vacancy thus caused may be filled up in accordance with Rule 12.

Corresponding Member of Council.

14. Any person in this or any of the adjoining Colonies who shall render services to the Society may be enrolled as a Corresponding Member of Council.

Revision of Rules.

15. These and all future Rules shall be altered and added to at a General Meeting only; special notice of any alteration or addition to be given a fortnight beforehand.

REPORT.

The Council of the Australian Health Society begs leave to submit to the subscribers the following Report of its operations during the year ended 31st August, 1881.

The Society now numbers over 300 members, thirty-seven of whom have joined during the past year, showing an increase upon last year's numbers. It may fairly be inferred from these figures that the Society is becoming stronger, and is steadily widening its sphere of influence and usefulness.

The balance-sheet of receipts and expenditure will show that on the 1st September, 1881, there remained a credit balance of £114 4s. 2d.

Early in the year the Council received, with great regret, the resignation by the Hon. James Service of his position as President, which he had filled since the inauguration of the Society. His Honour Mr. Justice Higinbotham, who has long taken a warm interest in the work of the Society, was elected at a subsequent meeting to the position.

The Council deemed it expedient to issue a reprint of Tract No. 1, "*Hints for the Prevention of Scarlet Fever.*" This was the third edition of this useful pamphlet; and at the same time a further issue of the "*Sanitary Alphabet,*" large and small size, was procured.

The three following new tracts were also published and circulated:—No. 11, "*Preservation of the Teeth,*" by Miss A. C. Moon; No. 12, "*Infectious and Contagious Diseases of Children,*" translated and adapted from a paper by Dr. Delpech, of Paris; No. 13, "*Small-pox and Vaccination,*" by Dr. J. P. Ryan.

From the Central Board of Health 4,000 copies of the tract on the "*Infectious Diseases of Children*" were received for the purpose of distribution.

Interesting reports from the Health Society of New South Wales and from the Ladies' Sanitary Association of London have been received. The latter, in its twenty-third Annual Report, speaks of friendly correspondence with Health Societies in Switzerland, France, and America, and the good work being done by the AUSTRALIAN HEALTH SOCIETY meets with due recognition.

Last year your Council did not make the usual arrangements for a course of lectures on sanitary subjects. It was felt that with the Social Science Congress in view, with a special Health Section, those who might have been willing to give their assistance would be engaged in the preparation of work for it. Like other societies and institutions, the Council of the Health Society was invited to send delegates to take part in the proceedings of the Congress. Accordingly, Dr. Jamieson, one of the vice-presidents, and Messrs. Lloyd Tayler and Wm. Crellin were appointed representatives. Mr. Crellin was prevented by his absence from the colony from taking any active part, but the other two gentlemen served as members of the Committee of the Health Section of the Congress, and, in addition to their services in that capacity, read papers and took part in the discussions at the meetings of the Section. Other members of the Society took a prominent part in the deliberations of the Congress, and many subjects of great importance were brought forward for consideration. These received more or less full notice in the public press at the time, and when the contemplated volume of "Transactions" is issued it is hoped that the papers on sanitary subjects will receive their fair share of attention.

A new series of Public Health Lectures is now being given, on successive Monday evenings, under the auspices of the Society, the first of which was delivered by R. W. E. MacIvor, Esq., on the 12th inst., followed by F. J. Gladman, Esq., on the 19th, both to large and appreciative audiences representing all classes of the community. The course will be continued by Mrs. Webster, James Smith, Esq., C. R. Blackett, Esq., Dr. Jamieson, and Dr. T. P. Lucas.

The Society's half-yearly meeting was held on the 6th May in the Town Hall, the chair being taken by Mr. Justice Higinbotham, the new president. Two interesting papers were read, and profitable discussions followed. One paper was contributed by Mrs. Webster,

and dealt with "The Smoke Nuisance," and the other, which was furnished by Dr. Jamieson, was upon the important subject of "Town Milk."

A prize scheme was established last year, by means of which a sum of £20 was devoted to the purpose of encouraging in private schools the study of physiology and sanitation, and on account of its success the Council has again decided upon holding a similar examination, which will be held early in November. Replies have been received from ten schools expressing their intention of competing, and the Council looks forward to this undertaking as one likely to spread very widely a knowledge of, and a taste for, sanitary science.

On the 16th May, by invitation, the Council delegated four of its members to visit Geelong, and aid there in the inauguration of a Branch Health Society. The delegates, who were Mrs. J. Webster, and Messrs. Brodribb, Gladman, and Haydon, addressed a public meeting of more than 200 persons, and happily with a successful issue, as the following report from the Geelong Branch will show:—

REPORT OF THE GEELONG BRANCH.

This Branch was successfully formed, on the 27th April last, at a meeting held in the Mechanics' Institute on that evening. Mr. G. F. Link was elected president; Mr. Charles Kernot, M.L.A., and Mr. W. J. Thomas, vice-presidents; Mr. B. Hoare, Treasurer; and Mr. J. M. Anderson, Hon. Secretary.

The following were elected members of the Council, viz.:—Drs. Carstairs, Walshe, W. Shaw, Lyttleton and Warren, Messrs. Wilkins, Purdie, Owen, Shirra, and Hendy.

The rules of the parent Society were adopted with a little alteration.

A public inauguration of the Society took place in the large Hall of the Free Library in May, when delegates from Melbourne gave able and interesting addresses on sanitary subjects, which were attentively listened to by a large and appreciative audience.

The Council has held regular monthly meetings since, at which papers on sanitary matters have been read and discussed, from which much good has resulted.

Whilst the Council has thus been taking steps to thoroughly post up its own members, it has not been unmindful of its proper functions as a means of education to the people on sanitary science. Since the inaugural meeting already referred to, the Society has held three public meetings which have all been of an encouraging nature; one was in Geelong proper, the other two were district meetings, one in Newtown and the other in Geelong West. In addition

to the addresses delivered at these meetings by members of the Council, nearly 1,000 copies of the Society's tracts have been distributed gratuitously, which cannot fail to produce good results.

The Society now numbers something like sixty members, with a tendency to increase.

The Council has now under consideration two important subjects which, it is thought, require the prompt attention of the Legislature, viz., the amendment of the Health Laws of Victoria, and the subject of the prevention of Hydrophobia in the colony by a legislative enactment against the further importation of dogs from Europe.

G. F. LINK, *President.*
JAMES M. ANDERSON, *Hon. Sec.*

GEELONG, 21*st September*, 1881.

Correspondence with Sandhurst also took place, and Mr. A. Mica Smith informed your Council that the efforts to form a Branch Health Society had resulted in the formation of the "Bendigo School of Mines Science Society," which would collect together all the Health Society element in the district, and either do the work of a Branch Society, or prepare the way for the establishment of a separate body of that description. Your Council hopes to see in future more local branches, believing that they will aid materially in promoting the objects of the Society and in furthering its work and beneficial influence.

Further additions to the number of books in the Library have been made during the past year by both purchase and donation. Members are invited to avail themselves of the facilities thus afforded to obtain information on the important subjects that appertain to personal and public health. On the suggestion of a country member the prices at which the books may be obtained in Melbourne are included in the catalogue appended to this Report. The Council has again to thank Mr. W. Stubbs (Batchelder and Co) for the gratuitous use of the room in which the Library is kept, and thanks are also due to Miss Sim for her courteous attention to members of the Society using it.

The Council again tenders its thanks to Messrs. Beauchamp and Sons for the gratuitous use of the Temporary Office of the Society.

September 23*rd*, 1881.

THE HONORARY TREASURER in account with the AUSTRALIAN HEALTH SOCIETY.

Dr. **Cr.**

RECEIPTS.

To Balance at 31st August, 1880	£57	3	8
,, Subscriptions of Members, 1880-81	128	11	6
,, Rebate allowed on Purchases	1	6	0
	£187	1	2

EXPENDITURE.

By Printing and Circulating Annual Report	£9	17	6
,, Lectures and Public Meetings—			
Advertising	2	5	0
Posters, Handbills, Cards, &c.	4	18	6
,, Publication of Pamphlets, and Purchase of Books for Library	18	4	0
,, Subscription to Ladies' Sanitary Association... ...	1	1	0
,, Postage, Stationery, Duty Stamps, and Petty Expenses	19	15	0
,, Secretary for Services	16	16	0
,, Balance in Bank...	114	4	2
	£187	1	2

Audited and found correct.

J. McA. HOWDEN, Hon. Auditor.

MELBOURNE,
15th September, 1881.

WILLIAM CRELLIN,
Hon. Treasurer.

LIST OF MEMBERS FOR 1880-81.

Members will oblige by notifying to the Secretary any change in their place of residence.

Alston and Brown	£1	1	0
Alsop, Dr. T. O. F.	0	10	0
Alsop, John	0	5	0
Adcock, G. C.	0	5	0
Alcock, R. J.	0	5	0
Anderson, R. C.	0	5	0
Balfour, Jas., and Co.	1	1	0
Butler, Henry	0	10	6
Beauchamp and Sons	0	10	0
Balls-Headley, Dr. W.	0	10	0
Brodribb, Thos.	0	10	0
Burman, A. W.	0	10	0
Bunney, H. J.	0	10	0
Blackett, C. R.	0	10	0
Barnard, W. H. F.	0	10	0
Brown, Frank	0	10	0
Blair, Dr. John	0	5	0
Brian, David	0	5	0
Brown, J. W.	0	5	0
Barke, T. W.	0	5	0
Buzzard, T. M.	0	5	0
Bennett, Mrs. M. S.	0	5	0
Blackwell, R. T.	0	5	0
Brown, R. S.	0	5	0
Bairnsdale Shire Council	0	5	0
Bennie, Jas.	0	5	0
Bruce, A.	0	5	0
Bruce, W.	0	5	0
Baldwin, J.	0	5	0
Boys, Mrs.	0	5	0
Browne, Rev. F. H.	0	5	0
Burrows, J. G.	0	5	0
Coppin, Hon. Geo. S.	1	1	0
Carter, G. D., M.L.A.	1	1	0
Crellin, Wm.	1	1	0
Candler, S. C.	0	10	0
Cordell, Henry	0	10	0
Crossley, Henry	0	5	0
Campbell, Mrs.	0	5	0
Cole, Mrs. E. F.	0	5	0
Connor, T. J., State School, South Yarra	0	5	0
Clark, T. J.	£0	5	0
Carr, A. B.	0	5	0
Craig, R.	0	5	0
Cropper, Mrs. E. R.	0	5	0
Chipperfield, W.	0	5	0
Dawson, Mrs. Emma	1	1	0
Duerdin, Mrs.	1	1	0
Dudgeon and Arnell	1	1	0
Dick, Miss H. Elphinstone	0	10	6
Dawson, James	0	10	0
Davies, J. B.	0	10	0
Duerdin, James	0	10	0
Duerdin, Miss S. D.	0	5	0
Dorrington, Mrs.	0	5	0
Dorrington, John	0	5	0
Duffett, J. G.	0	5	0
Donaldson, John	0	5	0
Dombrain, Edward	0	5	0
England, M. H.	0	10	0
Earles, Mrs.	0	5	0
Earles, Chester	0	5	0
Elder, C. W.	0	5	0
Edmonds, S. A.	0	5	0
Elvins, Jas., State School, Campbell's Creek	0	5	0
Finnigan, E. D.	0	10	6
Finnigan, J. P.	0	10	6
Foster and Martin	0	10	0
Fehon, W. M.	0	10	0
Forbes, R. A.	0	5	0
Fraser, Miss	0	5	0
Ferguson, G.	0	5	0
Gray, Dr. A. S.	1	0	0
Gill, James	1	0	0
Gibbs, E. M.	0	10	0
Günst, J. W., M.D.	0	10	0
Gillbee, Surgeon, J.P.	0	5	0
Grant, Mrs. A.	0	5	0
Grant, A.	0	5	0
Geach, Mrs. Ed.	0	5	0

Gates, Alfred	£0	5	0
Gladman, Mrs.	0	5	0
Gladman, F. J.	0	5	0
Good, C. E.	0	5	0
Greig, J. D., Blackwood	0	5	0
Gibbons, Sydney	0	5	0
Guillaume, Geo.	0	5	0
Gooch, H. M.	0	5	0
Gosman, Rev. A.	0	5	0
H.Y.Z.	3	0	0
Harper, Andrew	1	0	0
Handfield, Rev. H. H. P.	0	10	0
Hosie, J. S.	0	10	0
Haydon, J. H.	0	10	0
Hunt, J. W.	0	10	0
Horsfall, Mrs.	0	5	0
Horsfall, Joseph	0	5	0
Howgate, Mrs.	0	5	0
Howgate, Miss	0	5	0
Harriman, B. C.	0	5	0
Haigh Bros.	0	5	0
Hill, George	0	5	0
Hodgson, R.	0	5	0
Horsfall, Jonas	0	5	0
Henderson, Thos.	0	5	0
Hedderwick, H.	0	5	0
Harper, John	0	5	0
Hyman, L.	0	5	0
Herring, Rev. J. E.	0	5	0
Hayden, Ed. L.	0	5	0
Hutchinson, M. L.	0	5	0
Hornblower, J. G.	0	5	0
Haughton, Jos., State School, W.M.	0	5	0
Henry, Dr. Louis	0	5	0
Howden, J. McA.	0	5	0
Hummel, Alfred	0	5	0
Hiskens, John	0	5	0
Harrison, W. N., and Co.	0	5	0
Hicks, Wm., State School, Taripta	0	5	0
Irving, M. H.	0	10	0
Inglis, T. A. F.	0	5	0
Inglis, R. S.	0	5	0
Inglewood Borough Council	0	5	0
Jamieson, Dr.	0	5	0
Jamieson, Mrs.	0	5	0
Johnson, Henry	0	5	0
Johns, R. E.	0	5	0
Jones, W. P.	0	5	0
Jackson, T. J.	0	5	0
James, John E., State School, Banyena	0	5	0
Kearney, Alan W.	£1	0	0
Knight, Miss	0	5	0
Kelson, Horatio	0	5	0
Lewis and Whitty	0	10	6
Long, D. R., and Son	0	10	0
Lyell, Andrew	0	10	0
Leeper, Alex., M.A.	0	5	0
Lawes, Mrs. Henry	0	5	0
Lord, Edmund	0	5	0
Lang, M.	0	5	0
Lemmon, Mrs.	0	5	0
Lormer, Robert	0	5	0
Link, G. F.	0	5	0
Lupson, G. T.	0	5	0
Leach, E. C., State School, Codrington	0	5	0
Meares, George	3	3	0
Macdougall, James	2	2	0
Morris, Ed. E., M.A.	1	1	0
Moloney, Dr. P.	1	1	0
McEwan, Jas., and Co.	1	1	0
McCrea, W., M.D.	1	0	0
McLean Bros. and Rigg	1	0	0
MacIvor, R. W. E.	1	0	0
McCarron, Bird and Co.	1	0	0
Moon, Miss A. C.	0	10	6
Mason, Firth, and McCutcheon	0	10	0
McCulloch, Wm.	0	10	0
Murray, James	0	10	0
Maine, N.	0	10	0
McGuigan, John	0	5	0
Macartney, Very Rev. Dean	0	5	0
McMillan, T. L., M.D.	0	5	0
McInerney, Dr. J. R.	0	5	0
Morrison, Alex., LL.D.	0	5	0
Morrison, A. F., B.A.	0	5	0
Morrison, James	0	5	0
Morrison, Henry H.	0	5	0
Meeks, Alfred W.	0	5	0
Mofflin, Mrs. E.	0	5	0
Mofflin, E.	0	5	0
Muir, C.	0	5	0
Moule, T. W.	0	5	0
McCrindle, Rt.	0	5	0
Macredie, W.	0	5	0
Muir, Mrs. W. K.	0	5	0
McNicol, R. H.	0	5	0
Mullen, Samuel	0	5	0
Morton, Geo. H., State School Benjeroop	0	5	0
McCormick, Miss	0	5	0
Moon, H. M.	0	5	0
Marsh, W. G., Y.M.C.A.	0	5	0
M'Hugh, Miss E.	0	5	0

Neild, Dr. J. E. £1 1 0
Newell and Co. 1 1 0
New Zealand L. and M. A. Co. 1 1 0
Niven, Miss 0 10 0
Niven, W. 0 10 0
Nell, F. A., State School 112 .. .. 0 5 0
Naylor, W. H. 0 5 0
Nulty, Rev. C., S.J. 0 5 0

Officer, S. H., Swan Hill 1 1 0

Peel, Dr. Robert 0 10 0
Principals, Holstein House 0 10 0
Payne, Mrs. H. W. G. 0 5 0
Purnell, T. 0 5 0
Prüser, Henry 0 5 0
Planck, S. M., State School 1534 .. 0 5 0
Pestell, Wm. 0 5 0
Purves, P. T. 0 5 0
Patterson, T. G., State School, Tyrendarra 0 5 0

Ryan, Dr. Jas. P. 1 1 0
Robertson and Moffat 0 10 6
Robertson, Jas., M.D. 0 10 0
Ramsay, Hon. Robt. 0 10 0
Rudall, Dr. J. T. 0 5 0
Robertson, Wm. 0 5 0
Rennie, Chas. 0 5 0
Rusden, H. K. 0 5 0
Readshaw, Sarah, State School, W.M. .. 0 5 0
Reynolds, P. E. 0 5 0

Service, Hon. Jas. 3 3 0
Smith, R. Murray 1 1 0
Shaw, A., and Co. 1 1 0
Stewart, T. M. 1 1 0
Smith, Dr. P., Brisbane 1 1 0
Stevens, F. P. 1 0 0
Shew, Ed. 0 10 6
Stobbs, Rev. J. G. 0 10 0
Strong, Rev. Chas. 0 10 0
Slater, John, and Co. 0 10 0
Selby, Mrs. 0 10 0
Selby, Geo. W. 0 10 0
Sutherland, Alex., M.A. 0 10 0
Stewart, R. 0 10 0
Stillwell and Co. 0 10 0
Service, Miss L. M. 0 5 0
Service, Miss Lilian 0 5 0
Steele, Dr., Toorak 0 5 0
Sanderson, J., and Co. 0 5 0
Simmonds, S. P. 0 5 0
Spencer, Mrs. 0 5 0
Stubbs, Wm. 0 5 0
Stickland, Mrs. F. 0 5 0
Stickland, Fras. 0 5 0
Sprigg, W. G. 0 5 0
Sprigg, Miss 0 5 0
Smith, J. M. 0 5 0
Small, Wm. 0 5 0
Stockdale, B. 0 5 0
Stevens, Horace 0 5 0
Salter, Chas. 0 5 0

Stach, Julius, State School, Richmond .. £0 5 0
Sinclair, John 0 5 0
Smith, James, State School, Albert Park 0 5 0
Shepherd, L., State School, Fitzroy .. 0 5 0
Scott, James 0 5 0
Sundercombe, J. S. 0 5 0
Singleton, Mrs. 0 5 0
Smibert, Jas. 0 5 0
Scott, Mrs. A., Adelaide 0 5 0
Slade, Ion S., State School, Sandhurst .. 0 5 0
Shillinglaw, J. J. 0 5 0

Turner, H. G. 1 1 0
Tayler, Lloyd 1 1 0
Templeton, J. M. 1 1 0
Tod, J. W. 0 5 0
Thomson, John 0 5 0
Turner, Mrs. Wm. 0 5 0
Turner, Wm. 0 5 0
Techow, Gustav 0 5 0
Templeton, T. H., State School, Prahran 0 5 0
Trickett, Mrs. 0 5 0
Trickett, Miss 0 5 0
Tindale, Henry 0 5 0
Thorpe, John 0 5 0
Taylor, John 0 5 0
Thurlby, W., State School, Kingston .. 0 5 0
Thompson, Walter 0 5 0
Thurlby, A. H., State School, Maldon .. 0 5 0
Trend, Saml., State School, Pootilla .. 0 5 0
T.H. 0 5 0

Urquhart, Mrs. W. S. 0 5 0

Wilson, Ed., Executors of late 5 0 0
Wonnangatta East Board of Advice, per
W. H. Morgan 1 1 0
Webster, Mrs. J. 1 0 0
Webster, John 1 0 0
Wilson, R. G., and Co. 1 0 0
Walker, May and Co. 0 10 0
Waters, Ed. 0 10 0
Webb, Mrs. 0 10 0
Webb, S. J. 0 10 0
Wyburn, T. J. 0 10 0
Wilkinson, Mrs. 0 5 0
Whyte, Mrs. P. 0 5 0
Whyte, P. 0 5 0
Wharton, Geo. 0 5 0
Whitehead, E., and Co. 0 5 0
Wilson, T. R. 0 5 0
Willmott, Wm., State School 1073 .. 0 5 0
Webb, George 0 5 0
Watt, Chas. 0 5 0
Wallen, R. 0 5 0
Wyleigh, Geo. T. 0 5 0
Walters, Thomas 0 5 0
Walker, Percy, State School, W.M. .. 0 5 0
Wilkinson, S. J., Crowlands 0 5 0
Wing, Miss A. 0 5 0
Webb, Jos. H., State School, Jamieson .. 0 5 0

Zumstein, H. 0 5 0

LIBRARY

OF THE

AUSTRALIAN HEALTH SOCIETY.

RULES.

1.—A Member shall be responsible for any book borrowed, and shall return it to the Librarian within thirty days.

2.—No Member shall be allowed to have more than three volumes in possession at one time.

3.—The Library is open for the giving out of books and receiving the same daily from 9 to 5.

4.—It shall be competent for the Council to decide on any matter not provided for by the foregoing rules.

Library at Batchelder & Co.'s, Photographers, No. 41 Collins Street East.

CATALOGUE.

1 Common Sense Management of the Stomach. G. O. Drewry, M.D. 2s. 6d.
2 Self Culture : Intellectual, Physical, and Moral. Professor J. S. Blackie. 3s.
3 Health in the House. C. M. Buckton. 2s. 6d.
4 Domestic Economy and Household Science. R. J. Mann, M.D. 5s. 6d.
5 Our Home Work. Mrs. W. H. Wigley. 3s. 6d.
6 Sanitary Science. R. Scott Burn. 1s. 6d.
7 Another copy
8 Secret of a Clear Head. J. Mortimer Granville. 1s.
9 School Manual of Health. Edwin Lankester, M.D. 2s. 6d.

10 Personal Care of Health. E. A. Parkes, M.D. 1s.
11 Another copy
12 Another copy
13 Another copy
14 Another copy
15 Another copy
16 Another copy
17 Physiology: Health Primer. Dr. M. Foster. 1s.
18 Plain Words on Health. Dr. John Brown. 8d.
19 Preservation of the Teeth. John Gray
20 Personal Appearance in Health and Disease: Health Primer, No. 5. 1s.
21 Premature Death: Health Primer, No. 1. 1s.
22 Baths and Bathing: Health Primer, No. 6. 1s.
23 Exercise and Training: Health Primer, No. 3. 1s.
24 Handbook in Injuries or Sudden Illness. P. Shepherd, M.B. 1s. 6d.
25 The House: Health Primer, No. 4. 1s.
26 First Lessons in Health. J. Berners. 1s.
27 Chemistry. H. E. Roscoe. 4s. 6d.
28 Lessons in Elementary Physiology. T. H. Huxley. 4s. 6d.
29 Lessons for Children about Themselves. Part I.: The Body.
30 Our Bodies. Ellis Davidson. 1s.
31 Kindergarten System. M. Bailey. 6d.
32 Home and its Duties. J. W. Laurie. 1s. 6d.
33 Our Bodies. Ellis Davidson. 1s.
34 How to Live Long. Dr. Hall. 2s.
35 Temperance Lesson Book. B. W. Richardson. 1s. 6d.
36 Ten Laws of Health. J. R. Black, M.D. 3s. 6d.
37 Healthy Skin. Erasmus Wilson. 3s.
38 Seven Sources of Health. W. Strange, M.D. 3s. 6d.
39 Nervous Disorders. C. F. Mackin, M.D. 2s.
40 Notes on Nursing. Florence Nightingale. 9d.
41 Another copy
42 Another copy
43 Another copy
44 Ourselves, Our Food, and Our Physic. Dr. Ridge. 1s. 6d.
45 What to Wear. Elizabeth Stuart Phelps. 1s.
46 Manual of Domestic Economy. Jane Staker.
47 Phosphate of Lime. L. Dusart
48 A Handy Book on the Laws relating to Public Health in Victoria. W. J. Gilchrist.
49 Alcohol: six lectures. B. W. Richardson, M.D. 1s.
50 Physical Education of Children. Dr. Hartwig. 1s. 3d.
51 Physiology, Animal and Mental. O. S. Fowler. 6s. 6d.
52 Health Hints
53 Health Lectures: delivered in Manchester. 1s. and 2s. 6d.
54 Handbook of Hygiène. Dr. Wilson. 12s.

55 Chemistry of Agriculture. Macivor. 6s.
56 Chemistry of Common Life (two volumes). J. F. W. Johnston. 7s. 6d.
57 A Ministry of Health. B. W. Richardson, M.D. 10s. 6d.
58 Foods. Dr. E. Smith. 5s.
59 Physiology of Common Life (two volumes). G. H. Lewes. 12s.
60 How not to be Sick. A. J. Bellows, M.D. 10s.
61 Philosophy of Eating. A. J. Bellows, M.D. 10s.
62 Another copy
63 Another copy
64 Diet in Health and Disease. T. K. Chambers, M.D. 12s.
65 Manual for Medical Officers of Health. Dr. E. Smith. 10s.
66 Human Physiology the Basis of Sanitary and Social Science. T. Nichols, M.D. 6s.
67 Preservation of Health. Thos. Inman, M.D. 6s.
68 Preventive Medicine in relation to Public Health. Alfred Carpenter, M.D. 7s.
69 Sanitary Arrangements in Dwellings. William Eassie. 6s. 6d,
70 Healthy Houses. Fleeming Jenkin. 3s.
71 Hygiène. J. H. Pickford, M.D.
72 Typhoid Fever. William Thomson, F.R.C.S.
73 Education: Intellectual, Moral, and Physical. Herbert Spencer. 3s. 6d.
74 Purification of Water-carried Sewage. H. Robinson and J. C. Melliss. 7s.
75 Health. W. H. Corfield, M.A. 6s.
76 Water Babies. Charles Kingsley. 6s.
77 Soldier's Manual of Sanitation. C. A. Gordon, M.D. 1s. 3d.
78 Health in the House. C. M. Buckton. 2s. 6d.
79 Manual of Gymnastic Exercises. Gustav Techow
80 Sanitary Hints: "Light, Air, &c." Banister Fletcher. 7s.
81 Eyesight: Good and Bad. R. B. Carter. 7s.
82 Physical Education. Arch. Maclaren, Oxford Gymnasium. 8s. 6d.
83 Food and Feeding. Sir H. Thompson. 2s. 6d.
84 How to get Strong. Blaikie. 5s.
85 Healthy Life and Healthy Dwellings. Wilson. 6s.
86 Five Gateways of Knowledge. G. Wilson. 3s.
87 The House of Life. Mrs. Miller. 2s. 6d.
88 Brainwork and Overwork. Health Primer. 1s.
89 The Heart. Health Primer. 1s.
90 Domestic Economy for Girls. Rev. E. J. Stevens.
91 The Diet Cure. T. Nichols, M.D. 1s.
92 Healthy Life and Healthy Dwellings. Wilson.
93 Two Dear Little Feet.
94 Our Bodies. Ellis Davidson. 1s.
95 Food and Home Cookery. Miss Buckton. 2s. 6d.
96 The Water Supply of Bombay. Tulloch.
97 How to Live on Sixpence a Day.
98 The Religion of Health. Dr. Elizabeth Blackwell.
99 The Mouth and Teeth. Long Life Series. 1s.

100 Health Lectures for the People. 1s.
101 Healthy Homes. Stanley Haynes. 2s.
102 Familiar Lessons in Physiology. Mrs. L. M. Fowler. 2s. 6d.
103 Thrift Lessons. J. T. Walters.
Miscellaneous Tracts, Pamphlets, Reports, &c.

HEALTH SOCIETY'S PUBLICATIONS.

1 Hints about the Prevention of Scarlet Fever
2 Pure Air and Ventilation
3 Rules for the Prevention of Typhoid Fever
4 Under the Floor
5 Rules for the Management of Infants
6 Notes on Diet
7 What Kills our Babies
8 Diseases which should be Prevented
9 Summer Diseases: 1, Ophthalmia; 2, Sunstroke
10 A Bad Smell
11 Preservation of the Teeth
12 Infectious and Contagious Diseases of Children
13 Small Pox and Vaccination
The Sanitary Alphabet, large and small.