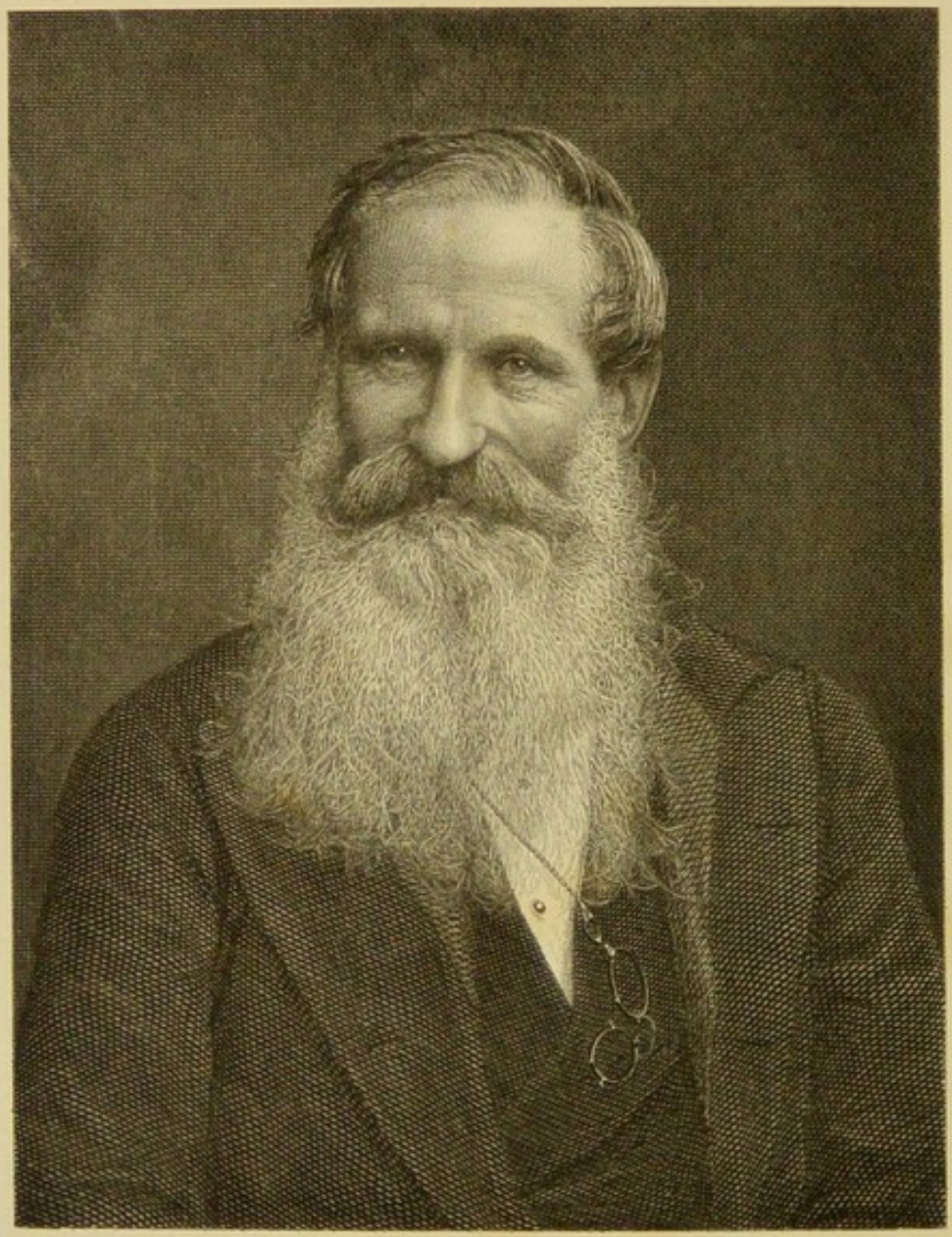
Health and activity in middle and later life / by Joseph Constantine.

HEALTH AND ACTIVITY IN MIDDLE AND LATER LIFE

HEALTH AND ACTIVITY
IN
MIDDLE AND LATER LIFE.



Isaac Holden, M.P.

HEALTH AND ACTIVITY

IN

MIDDLE AND LATER LIFE.

BY

JOSEPH CONSTANTINE,

AUTHOR OF "HYDROPATHY AT HOME."

WITH A

PORTRAIT OF MR. ISAAC HOLDEN, M.P.

JOHN HEYWOOD,
DEANSGATE AND RIDGEFIELD, MANCHESTER;
1, PATERNOSTER BUILDINGS,
LONDON.

1890.

MANCHESTER:
EXAMINER PRINTING WORKS,
PALL MALL.

TO

MY DEAR OLD FRIEND,

THOMAS COOPER,

AUTHOR OF "THE PURGATORY OF SUICIDES,"

WHO THROUGHOUT A LONG LIFE HAS MADE GREAT

EFFORTS TO ELEVATE THE PEOPLE,

INTELLECTUALLY, MORALLY, RELIGIOUSLY, AND

SOCIALLY;

AND TO WHOM, IN MY YOUTH, I LOOKED

FOR ADVICE AND GUIDANCE;

THIS SMALL VOLUME

IS RESPECTFULLY AND AFFECTIONATELY

DEDICATED.

PREFACE.

TO anyone like myself, who has for nearly half a century been coming constantly into contact with all sorts of invalids, it cannot but be known that the large majority of cases are the result of improper diet or other violation of the laws of health. It is my experience that most of the sufferers, having had fairly good constitutions and strong bodies to begin with, would never have ailed anything and would have lived the full term of life, had they been more cautious and sensible about their food and drink. Instead of that, however, we find that the important matter of diet has been almost altogether disregarded, with the inevitable consequence that the careless ones have passed away quite prematurely. Nothing, indeed, can be more distressing than to see people suffering from painful diseases during the last few years of their lives, while they might have been enjoying ease and happiness to the end, quietly and naturally dropping out of life as into a sleep.

The drinking customs contribute materially to cause disease and shorten life. To my mind our law-makers at Westminster have either been knavish or foolish in allowing the drink curse to attain such magnitude as it has; but perhaps too much ought not to be expected from men who try to do their work in the night when they ought to be in bed—just as if their deeds were evil and would not bear the light of day!

More than twelve years ago, I was invited to call on Mr. ISAAC HOLDEN, M.P., on a matter of business. On that occasion his diet and habits arrested my attention. I soon discovered that he knew how to live better than any man I had ever met; and successive visits to his charming residence

have only the more impressed me with the correctness of his diet and mode of life, especially for those of advanced age. That some one more competent than myself has never thought it worth while to give to the public, ere this, the particulars which will be found in the following pages, has occasioned me no small surprise. And as I consider it to be the duty of everyone, if opportunity offers, to avail himself of "the privilege to add something, however small, to the sum of human knowledge and human happiness," I publish this small volume, in the hope that it may, with some success, show men how to attain and enjoy a useful, a painless, and a green old age.

JOSEPH CONSTANTINE.

THE BATHS,
23, OXFORD STREET, MANCHESTER,
April, 1890.

CONTENTS.

ILLUSTRATIONS.

HEALTH AND THE FULL TERM OF LIFE.

DR. THOMSON, in his "Medical Dictionary," says: "At some future day there can be little doubt that the value and duration of life will be extended greatly beyond what it is at present—*greatly beyond*, perhaps, *what we at present can imagine*."

G. H. Lewes, in "The Physiology of Common Life," says: "If the repair were always identical with the waste, never varying in the slightest degree, life would then only be terminated by some accident, *never by old age*."

WHAT IS HEALTH?

Emerson says, "Health is the first wealth." Yes, that is so, and it should occupy the first and highest consideration, as it stands in front of and above the accumulation of this world's goods and of precious metals. Health, which is of great value to the individual in any station of life, and to the nation to which he belongs, may be described shortly as the harmonious action of the functions of the various organs of a sound body. "Animal life, in its ultimate analysis, is nothing more or less than a continued transformation of matter—an uninterrupted decay and restoration of

the body—the ceaseless operations of the two opposing processes of supply and waste, of building up and taking down, of depositing new materials and removing old. This perpetual change of matter is the primary law of life. It is this which keeps all the tissues and structures of the body in a constant state of repair—ever renewing the materials of the organisation, and counteracting its wear and tear. Dead and inorganic matter is converted into living and organised; food is changed into blood, and blood becomes solid tissue. This solid fabric, having served its purpose in the economy, becomes, in its turn and piecemeal, dead and effete; is decomposed into its organic elements, and removed from the system in the shape of excretions. These worn-out materials, conveyed away in the returning circuit of the blood, impart to it a black colour and poisonous properties. The lungs, kidneys, liver, and skin serve as emunctories or drains, by which these noxious compounds are evacuated from the system. In the same backward current of the blood, the new materials of growth, repair, or strength are poured in by their carriers, the lacteal system; and in the lungs, a fresh supply of oxygen is momentarily received. The blood is thus continually recruited, renovated, purified, and made fit for the purposes of life. These two grand processes of supply and waste comprise the functions of digestion, absorption, circulation, assimilation, respiration, and excretion."

It will occur to any one reading the above terse description of animal life by Dr. Balbirnie that, to

maintain the healthy equilibrium, man must not abuse or take liberties with his constitution; he must conform to natural laws. The lower animals, living in a state of nature, select their food by instinct. Man, being endowed with reason, his thinking powers ought to enable him to select the best food for maintaining health. As for the fluid—water, which all animals require, that has been provided in abundance; man has only to see that he gets it pure.

WHAT IS THE FULL TERM OF HUMAN LIFE?

Dr. Flourens, of Paris, argues that man ought to live to one hundred and twenty-five years of age; that, as a rule, all animals live five times the period required for their full development; so that a man arriving at maturity at twenty-five, he ought to live five times twenty-five years. Now man, being the highest organised animal, and with a superior brain capable of reasoning, he should, with education, culture, and scientific knowledge of the laws of health, be able to extend his life even beyond that period. Here arises an important question, Why does man not live half his natural life? He now only reaches an average short of forty-two years. In the matter of length of life he falls a long way below the brute creation. Why is this? There must be something seriously, radically wrong in his habits, diet, surroundings, or the treatment of himself, if he thus dies off in his prime; his life is a *failure;* he only does

half the work for which he was sent into the world, thereby only showing a bankrupt life paying only 7s. 6d. or 10s. in the pound. When the mortality of any town is double what it ought to be, there is usually a sharp inquiry as to the cause of the high death-rate. The short life of mankind is not limited to a town, it is a national question of the utmost importance, and it ought to command the immediate attention of the Imperial Parliament, and of the highest intellects of the day.

THREE MAIN CAUSES OF SHORT LIFE.

There are three main causes which contribute materially to bad health and to shorten life—errors in diet and over eating, the national drinking customs, and tobacco smoking. The universal and common use of alcoholic liquors is like a malignant cancer, or some devastating microbe, eating into the vitals of our social life, and is at the same time causing a mass of extreme poverty, pauperism, degradation, immorality, and crime which are truly appalling. Nine out of every twelve paupers are so through drink; eight out of every ten criminals are so through drink; one death out of every ten is due to drink. It would be well if our leading statesmen would walk through the low parts of a large city, as Professor Huxley once did. "Since I have walked through your great town of Liverpool I have seen fully as many savages, and as degraded savages, as in Australia—nay, worse. I declare it has been shocking to me, walking through your streets, to see

unwashed and unkempt brutalised people, side by side with the greatest refinement and greatest luxury. . . . Talk of political questions? . . . The man who can see, I think, will observe that in these times there lies beneath all these questions the greatest question whether that profligate misery which dogs the footsteps of modern civilisation should be allowed to exist. . . I say I believe that it is *the great political question of the future. If you could only see the right way of doing it, I could see no nobler work than to go with you in that object.*"

THE NATIONAL DRINKING CUSTOMS.

The festering mass of human depravity caused by the drinking customs of society has grown to such proportions that it has been too much for the old religious organisations, the temperance societies, and philanthropists combined, and it has brought into existence General Booth and his Army, who certainly boldly attack King Alcohol. They go straight at him, enter his strongholds, and drag out of the gutter many rare specimens of fallen man, who are at once enlisted into the Army and trained to do battle for others. Now and again, as we know, there appears on the platform an ex-prize fighter, a noted thief or burglar, who have been familiar with the inside of jails, and it is anything but edifying to hear some of those men relate, with gusto, to what depth of depravity they had reached.

How has this dreadful state of things come about?

It cannot surely be a necessary part of civilisation. While it has been growing has there been no Government to look to the well-being of the people, and stop such an evil, or are we only just emerging from heathenism? Has it occurred through accident or by design? We have been told by a great statesman that it is the duty of law makers to so frame the laws as to make it easy for men to do right and difficult to do wrong. An opposite rule seems to have *guided those* who have framed the laws relating to the sale of intoxicating drink. The people have been led into temptation, and find it difficult to do right and easy to do wrong.

HOW THE "DRINK CURSE" WAS INTRODUCED.

Dr. F. R. Lees, who for over half a century has been the champion of the scientific side of total abstinence, and has vanquished every antagonist who has dared to meet him in discussion, has lately been showing how the drink curse was introduced three hundred years ago by the *peers of the realm.* He says—"If you go to Froude's history of the days of Queen Elizabeth, you will find these words written by the historian:—'The alehouses, the very stock and stay of false thieves and vagabonds, were supported by the gentlemen for the worst motives. The peers had the privilege of importing wine, free of duty, for the consumption of their households. By their patents they were able to extend the rights to others under shelter of their name; and the tavern keepers were

my lords' servants, or my master's servants; yea, and had such kind of licences, and licence out of licence to them and their assignees, that it was some danger to meddle with them.' That, gentlemen, was the beginning of the system which has been handed down to us."

From Queen Elizabeth's time to 1830, those who sold intoxicating drinks were known as licensed victuallers, but now it would be more consistent with truth to designate them *licensed to degrade and demoralise* their fellow men. Good, clear-headed John Wesley, in his fifty-third published sermon, names them "poisoners general," and said, "They murder his majesty's subjects by wholesale; neither do they ever pity or spare. They drive them to hell like sheep." Had the disciples and followers of John Wesley condemned the traffic in intoxicating drinks as he did himself, and spoken as boldly from the pulpit, the chances are that the annual drink bill of the United Kingdom would never have reached the monstrous sum of £132,000,000, and the injury to the nation would not have been nearly so great.

THE GREAT DUKE'S BEER BILL.

It is said of the Duke of Wellington that the only enemy he ever feared was *King Alcohol*, and that when, in 1830, the people were clamouring and demanding franchise and representation reform, he said, "Give them drink and we can manage them,"—and the Beer Bill was passed. It is a fact that no part of

the community asked for that bill. It is very possible that the great duke looked upon *the people* as a part of those who, like his soldiers, were merely to be commanded, and bound to obey the orders of "*their betters.*" In this matter Lord Brougham was hoodwinked. It was represented to him that if the people could obtain beer more freely there would be less drinking of ardent spirits, and that the Beer Bill in effect would really promote temperance. Accordingly he lent his assistance to pass the bill, but it lay on his conscience the remainder of his days. In 1839, he carried a bill through the House of Lords for the *repeal* of the Beer Bill, but it became a dead letter in the Commons. The masses having asked for their political birthright, the class-government of that day instead gave them *poison;* but it did not satisfy them, and the Reform Bill was passed two years later. The beershops which sprung up in the north of England were an unmitigated curse to the working classes, and they would have been a still greater curse had it not been for the noble efforts of a band of working men, who commenced the present teetotal movement at Preston, in Lancashire. Those men, headed by Joseph Livesey, were full of enthusiasm and determination; they took little note of granting of licences, they expected that they would succeed in persuading men not to enter public-houses or beershops, in short, not to touch, taste, or handle alcoholic drinks. But they miscalculated the power of the temptation; had they directed their efforts to securing the repeal of the Beer Bill, and had they succeeded,

they would possibly have rendered a greater service to their country.

A TYPICAL CASE.

The respectable middle class, who have never been in the habit of using or visiting these beershops, can have no conception of the evil work they have done amongst the working classes. Here is a brief account of one of them—a fair sample of others. On a beautiful hillside in the Worth Valley, Yorkshire, on a public highway, a man and his wife owned the cottage in which they lived, and in which they had earned an honest living by hand-loom weaving. They were respectable, well-behaved, decent people, a very handsome couple, in good health; a garden was attached to the cottage, and there was sufficient ground to enlarge the house and build a stable. This was done; a licence to sell beer to be drunk on the premises was applied for and granted. The future evil work of this house—it was all evil, there was not one redeeming feature—was inaugurated by a foot race for a new hat; several working men left their work to take part in the race, as a lark, as it was a new thing—a novelty. Up to this date none of those men had been addicted to drink, but now commenced a downward course of dissipation and degradation; many of them became drunkards, starved their families bodily and mentally, and brought misery to their homes. Moreover, through this one beerhouse, misery was brought into the wealthiest family in the neighbourhood.

This once handsome couple, who up to this beer-house business had lived amongst their neighbours in peace and goodwill, entered upon an occupation which brought poverty, disease, and premature death to their customers. What was their gain for causing all this disaster? The wife died heartbroken because of the immorality of her husband. The man died in a low public-house during a drinking bout. God's curse seems to have been on the money they made, for after their death it vanished, like chaff before the wind, out of the hands of those to whom it was bequeathed. Such lives are not worth living, such a business is not worth having, and a nation that permits it is blind to its own interest, and it is wicked of any Government to permit these beerhouses to be continued.

AN EXCELLENT EXAMPLE.

Another such beerhouse was opened on the opposite side of the valley, and for many years continued its course of destruction, ruining a large number of young men, and carrying misery to their homes. At length the owner of Oakworth House, Mr. Isaac Holden, M.P., took note of what was going on and moved in the matter, when the licence was withheld, a circumstance which proved to be a great blessing to the people in that neighbourhood. What a glorious England we should have if, in like manner, they could all be closed. Those dens of infamy were thought to be the most suitable schools for the working classes,

in 1830, by the lawmakers in London, many of whom knew more about and cared more for racing horses than for the people. Gamblers are not fit to be rulers and law-makers whatever may be their social rank; they are not producers, they do not contribute to the increase of wealth of the nation. When a man has settled down to be a gambler, he has reached a low state of human depravity; the morality and virtues of the people, which are the strength of the nation, are not likely to be promoted by gamblers.

EDUCATION AND COMPENSATION.

Since 1830, statesmen have discovered that if England is to hold her own in the race of nations, the people must be educated. The Education Act of 1870 was a necessity; board schools, and technical schools, and additional universities have been established. The nation has been slow to learn that the mind is not only worth while cultivating, but very profitable to cultivate in order to draw out whatever power or genius it may possess. The drinking customs are the greatest hindrance to education, and if the public-houses and beershops were really scattered over the country to allow the people to debase and degrade themselves it is time they were removed. If they were closed it would at any rate confer the *greatest* blessing upon beerhouse-keepers who have had the misfortune to be engaged in the traffic, as they only live an average of sixteen years after entering into the business. Ah! say some, we

must compensate the publicans. What, compensate them for ceasing to make paupers and criminals? If we are to compensate, we certainly ought to commence by compensating the widows and the orphans who have been made such by the traffickers in intoxicating drinks. Let us be *just* before we are *generous*.

THE MISTAKEN DIET OF THE WORKING CLASSES.

While the drinking customs of society have been doing such direful mischief directly amongst the working classes, they have indirectly contributed, in no small degree, to the deterioration of diet, since they have interfered with domestic economy, forethought, and good household management. While the diet of the middle and upper classes is more luxurious than that of the working classes, it is no better for health, nor for prolonged life; the humbler classes habitually use poor, innutritious, starchy, white bread, tea and coffee, and follow a wasteful system of cooking. Those above them in the social scale have a diet more varied and more costly; many eat animal food three times a day, and use intoxicating drinks as part of their meals. If men are to live their natural term of life, there must be a great reform in these respects. Considering the great progress which has been made during the last fifty years in science and in chemistry, and the facts ascertained with regard to the action of alcohol on the human body, it is amazing that such dense ignorance should still exist, even amongst otherwise educated

people. Not long ago, a bishop announced in a public meeting that he was obliged to take some alcoholic stimulant with his principal meals "to assist digestion"; whereas it is a well-known fact that alcohol does not assist, but retards digestion. It is not to be wondered at that the people get false dietetic notions when a public teacher like a bishop is astray.

Some particulars of digestion, and how it is performed, will be treated in the following section.

THE STOMACH AND ITS WORK.

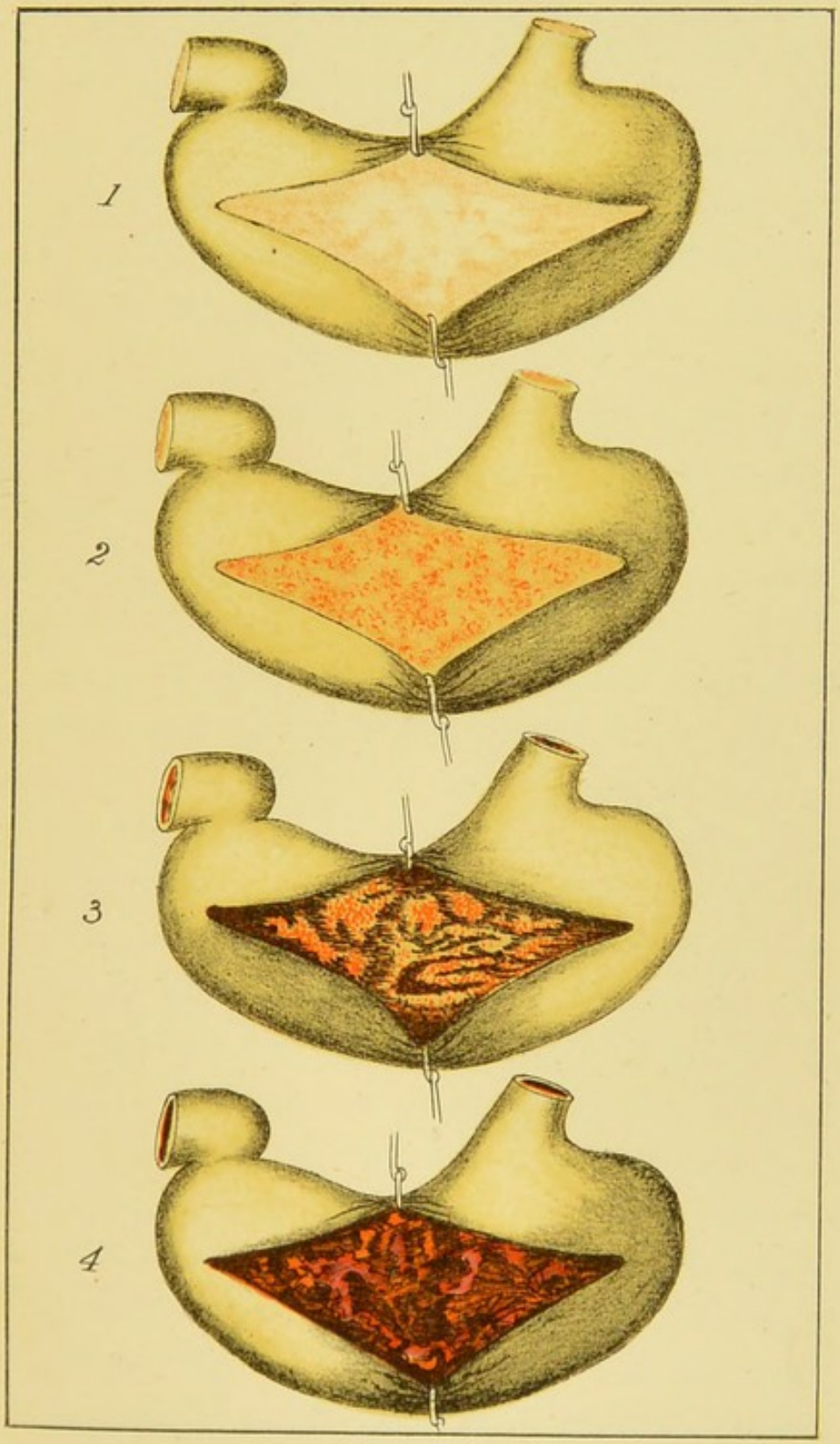
THE stomach performs a most important function; all the material for nourishing the body and repairing the waste which is always going on passes through it; and the quality of the nourishment, whatever the food may be which is taken, depends in a great measure on the condition of the stomach, whether it be healthy or otherwise. When in health it does its work well, and makes good blood; when out of health the opposite is the case, it does its work badly—like a poor workman with defective tools—the fluids being impure, the blood poor, and disease ensuing.

A very large number of people derange their stomachs for the want of a little knowledge. Dietetics alongwith physiology ought to be taught in every school. A short account of the process of digestion and the parts employed in it will be useful.

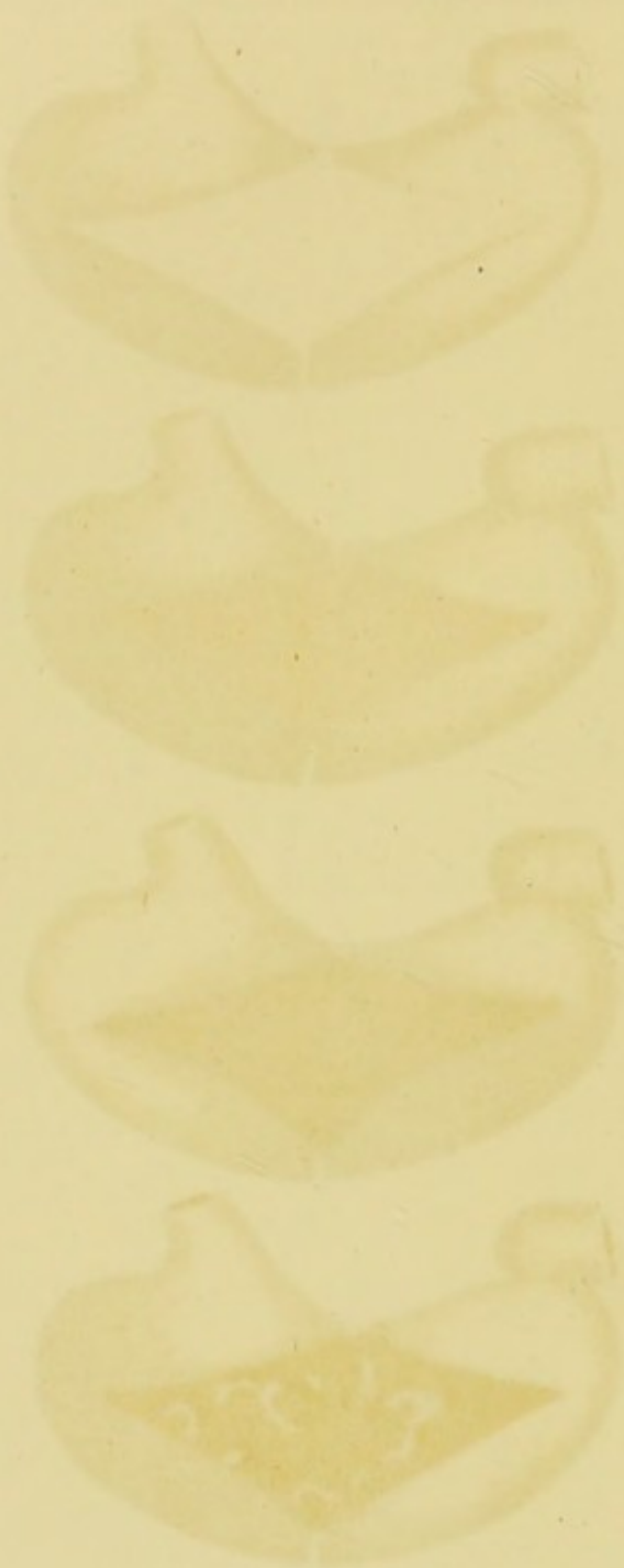
THE CHIEF PROCESS OF DIGESTION.

The following is a descriptive account of the chief process of digestion, by William Lovett, in "Anatomy and Physiology":—"The stomach is oval-shaped with an opening at each end—the one called the cardiac orifice, where the food enters, and the other the

THE STOMACH.



1. Stomach in a Healthy State.
2. Drunkard's Ulcerated Stomach.
3. Stomach of Drunkard after Debauch.
4. Stomach of Drunkard after Death from Delirium Tremens.



pylorus, by which the food passes out of it. The stomach is a muscular bag. It is formed of two strong layers, or fibrous membranes, one above the other, and is lined with what is called the mucous coat.

"In the outside membrane the fibres run lengthway of the stomach, and in the middle one they run round it; so that when they contract they give to the stomach a worm-like motion by which the food is kept in agitation till it is digested.

"The lining of the stomach has a velvety appearance of a pale pink colour. It is gathered up into folds and wrinkled so as to grasp the food, and when in a healthy state is continually secreting a mucous fluid to soften and keep it in order.

"The stomach is also covered with a great number of blood-vessels and nerves, which pass through it in all directions.

"In the lining of the stomach there are also a vast number of very minute vessels, which secrete the gastric juice, which is a transparent fluid of such a digestible or soluble nature as readily to convert all solid food into chyme. The sensation of hunger is occasioned by these vessels being over-filled. When there is no food in the stomach it is collapsed and inactive—goes to sleep and has its rest—but as soon as food enters it, it begins at once to be excited, the blood rushes towards it with great force, the gastric vessels begin to secrete their juice which mixes with the food, and the muscles of the stomach set it in active motion, which process continues until digestion is completed.

"When water or alcoholic drinks are taken into the stomach, they are not digested, but are immediately absorbed by the innumerable small vessels which cover its whole surface. Alcohol has a very pernicious effect, and inflicts serious injury upon these small vessels, which secrete the gastric juice and form the lining of the stomach.

"When the food passes out of the stomach in the form of chyme, it is not fully prepared to nourish the body. It has to undergo another important change before entering into the circulation. When the chyme passes out of the stomach it enters the upper end of the intestines, or bowels, named the duodenum. When in the duodenum it undergoes a kind of second digestion. It there mixes with bile and the pancreatic juice, and a juice secreted by the duodenum itself, by which process it is converted into two substances, one a white fluid called chyle, the other yellow, which finally becomes excrement. The bile is a bitter greenish fluid secreted from the liver. It is from the venous blood, which is constantly passed on to the liver. The bile is passed on to be lodged in the gall-bladder till wanted. The pancreatic juice is a peculiar fluid, in appearance something like saliva. It is secreted from the pancreas, or sweetbread—an oblong gland, one end of which is attached to the duodenum, the other to the spleen.

"Whenever there is any chyme in the duodenum, both these glands pour their juices into it drop by drop, by means of two small pipes, or ducts. When the food is thus converted into chyle, it passes into other portions

of the intestines, first into the jejunum, and then into the ilium. The intestines have three coatings similar to the stomach, and, when active, have the same worm-like motion. They have also, like it, their veins, arteries, nerves, and mucous ducts; and, in addition to these, are provided with a vast number of minute, absorbent vessels, called lacteals. The innutritious portion passes onwards to the intestines. The mesenteric glands are small glands between the folds of the mesentery. (The mesentery is the name of the membrane between the folds of which the intestines are supported.) They serve to purify the chyle, and pass it onwards into the small tube called *thoracic duct*, by which it is carried upwards and emptied into the venous blood, at the junction of the subclavian and *left* jugular veins."

INJURIOUS EFFECTS OF TOBACCO SMOKING.

The stomach may be deranged in various ways, but improper food and drink are the chief causes of derangement. Tobacco smoking, especially with youths, has a great deal to account for. Boys who begin to smoke do not know what permanent injury they are doing to themselves; the teeth and mouth are the first parts to suffer, then mucous nervous dyspepsia is caused, and it is usually very difficult to cure. Recently, Christopher Heath, F.R.C.S., lecturing to the medical students at the University College, London, on diseases of the tongue, said: "We get chronic inflammation of the tongue from various causes, perhaps one of the

commonest is the form which is due to smoking, for there can be no question whatever that tobacco has a deleterious effect on the mucous membrane of the tongue." In the same lecture he said: "The Registrar-General has pointed out that cancer is much on the increase. There are two or three explanations. I think, from my own observation, there can be no doubt that we do see more cases of cancer of the tongue than we did twenty or thirty years ago. One explanation is, I believe—you will excuse me for saying so—the greater spread of smoking." Professor Heath, we see, deems it necessary to apologise to the students for stating an unpalatable truth, as if smoking were a part of our daily bread. It is said that most of the leading actors in London suffer from a relaxed condition of the upper part of the throat. This, in the opinion of Sir Morell Mackenzie, is brought on entirely by smoking. His view is confirmed by the remarkable fact that while actors suffer very much from congestion and relaxation of the pharynx, actresses are very rarely afflicted in that way. Ladies who feel inclined to fall in with the present craze for "aping men even in their weaknesses," are advised to beware even of "toying with a cigarette." Some, it has been observed, only smoke with their lips, taking care that very little smoke passes the barrier of the teeth, but Sir Morell Mackenzie warns them that no lady who cares about her voice should expose it even to that slight risk. More than that, Sir Morell distinctly says "that the effect of tobacco on the body is both general and local; that is to say, it

acts on the nervous centres and on the heart as well as on the parts with which the smoke or the juice comes immediately in contact. The general effect does not concern us here, except in so far as the larynx may be effected thereby. It usually finds expression in what is vaguely called 'nervousness;' the pulse becomes flurried and the muscles more or less relaxed and unsteady. This is why smoking is so strictly forbidden to men training for athletic feats. So marked is the effect of tobacco in relaxing the whole muscular system that before the days of chloroform it was employed in surgical operations in which it was necessary that the muscles should be perfectly limp." With regard to the economical aspect of the tobacco question, an interesting calculation has been made showing that during the first fifty years of the reign of Queen Victoria six hundred and twenty-two million pounds was spent on tobacco in the United Kingdom. To count this enormous sum in sovereigns one each second for ten hours daily, Sundays and weekdays, it would take over forty-seven years.

REMARKABLE OBSERVATIONS OF DIGESTION.

If we could look into the stomach and ascertain what was going on after certain indulgences, especially following on festive occasions, we should be rather astonished; but there are few cases on record in which it has been possible to look into the stomach of a living man. The most remarkable case which has ever occurred

was that of A. St. Martin, who, when eighteen years of age, was accidentally wounded by the discharge of a musket, in June, 1822. He was at the time in good health and of sound constitution. The accident was a serious one, literally blowing off integuments and muscles the size of a man's hand, fracturing and carrying away the anterior half of rib, fracturing the fifth, lacerating the lower portion of the left lobe of the lungs, the diaphragm, and perforating the stomach. The opening into the stomach never healed completely. A natural valve covers the opening, and this valve could be pushed inwards and the action of digestion, it seems, observed. Dr. Beaumont, who attended St. Martin when the accident occurred, afterwards engaged him, and had him in his service more or less from 1825 to 1833. During that time he watched the process of digestion, and made experiments, which he fully recorded in a work which he published. In his observations he found that "whenever a feverish state was induced, whether from obstructed perspiration, from undue excitement, from stimulating liquors, from overloading of the stomach, or from fear, anger, or other mental emotion, depressing or disturbing the *nervous system, the villous coat sometimes became red and dry, and at other times pale and moist, and lost altogether its smooth and healthy appearance.* As a necessary consequence, the usual secretions became vitiated, impaired, or entirely suppressed; and the follicles from which, in health, the mucus, which protects the tender surface of the villous coat is

poured out, became flat and flaccid, and no longer yielded their usual bland secretion. The nervous and vascular papillae thus deprived of their defensive shield were then subjected to undue irritation. When these diseased appearances were considerable, the system sympathised, and dryness of the mouth, thirst, quickened pulse, and other symptoms showed themselves, and *no gastric juice could be procured or extracted, even on the application of the usual stimulus of food.*"

THE STOMACH IN HEALTH AND DISEASE.

When Dr. Beaumont published his book, in which he gave a detailed account of his experiments and observations on digestion, the gastric juice, &c., a great impression was made. Dr. Andrew Combe made very copious extracts in his "Physiology of Digestion." The following will show the value Dr. Combe attached to them:—He says, "These facts, if correctly observed, are of extreme importance; and from the care with which Dr. Beaumont pursued his investigations, I do not think their general accuracy can be called in question. The dry irritated appearance of the villous coat, and the absence of the healthy gastric secretion in the febrile state, not only explain at once the want of appetite, nausea, and uneasiness generally felt in the region of the stomach, but show the folly of attempting to sustain strength by forcing the patient to eat when food cannot be digested, and when nature instinctively refuses to receive it."

The accompanying plates show the *stomach* in health and in three stages of disease.

Plate 1 represents the internal or mucous coat of the stomach in a healthy state. It was drawn from one who had lived an entirely temperate life, and died under circumstances which could not have changed the appearance of the organ after death. Blood-vessels invisible.

Plate 2 represents the stomach of the drunkard after a debauch of several days. Internal coat highly inflamed, red and livid.

Plate 3 represents the drunkard's ulcerated stomach. Internal coat corroded.

Plate 4 represents the internal state of the stomach after death from delirium tremens. The mucous coat is covered by a dark brown flaky substance which, being removed, shows the organ to have been in a high degree of inflammation before death. In some points it is quite dark, as if in an incipient state of mortification.

These diagrams may be taken as accurate. They were drawn, with several others, by the late Dr. Sewall, of America, after long and extensive experience in the dissecting room, and confirmed by Dr. Beaumont's observations on St. Martin. Those facts have been before the public close on fifty years, and yet the drink *curse* has continued and the evil resulting from it has attained gigantic proportions. A great amount of ill-health and innumerable premature deaths result from our national drinking customs; and yet we boast of our civilisation, of our enlightenment, and of our religion. Is not this rather cause for humiliation?

A WORD OF WARNING.

The stomach may be so seriously deranged as to make recovery impossible—even in the case of those who do not take alcoholic drinks—by taking too many meals of soft pulpy food which does not require mastication. All liquid entering the stomach must first be disposed of by absorption before digestion can take place. The drier the food the more thorough must be mastication, which is essential to good digestion. Liquids should not be taken with meals, and never to aid in swallowing food. Vegetarians frequently suffer from taking pulpy or liquid food. Not long ago a prominent vegetarian died without any real disease; his stomach had got so deranged that he could not digest food, and he was starved to death.

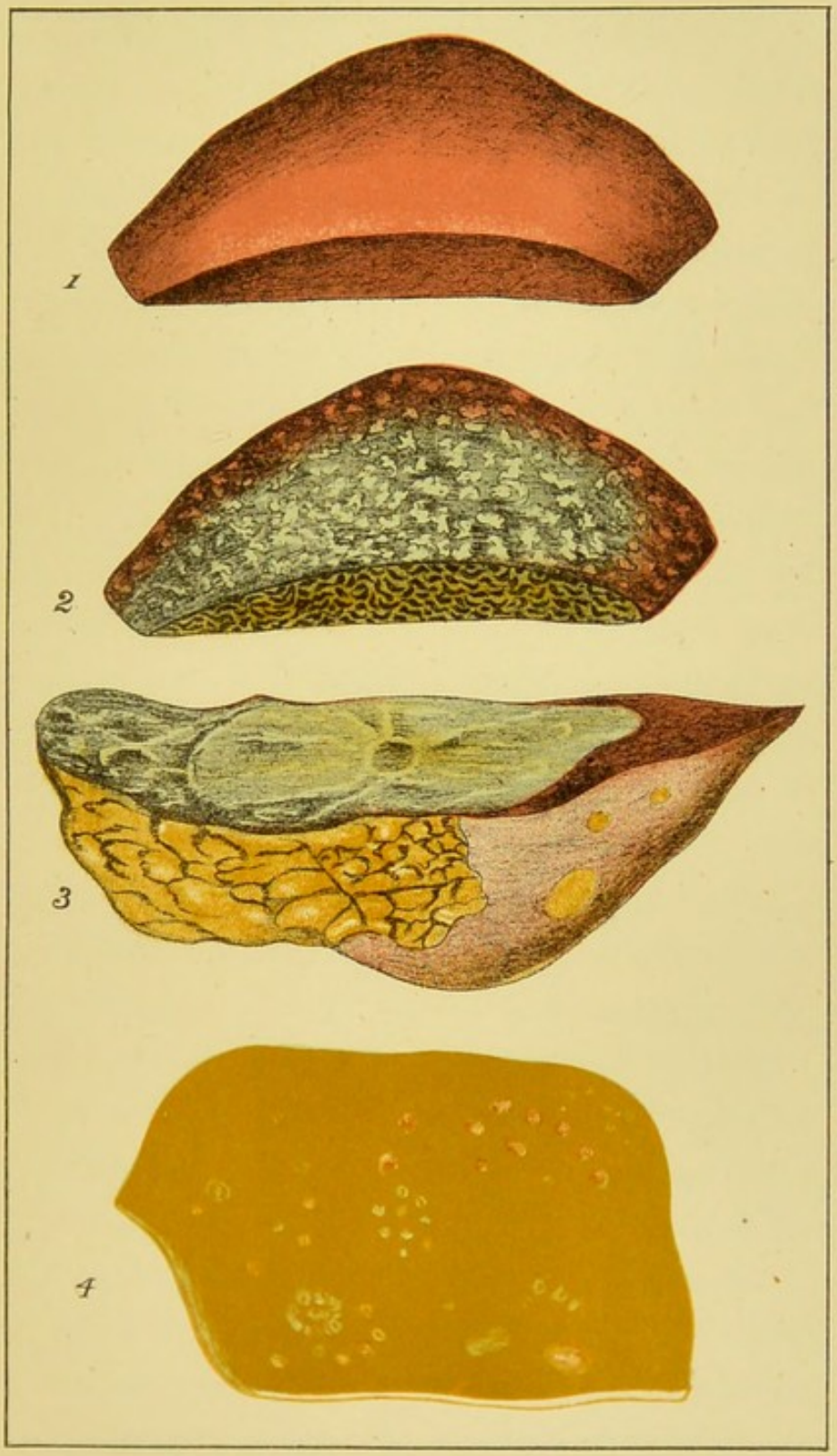
THE LIVER AND ITS WORK.

THE poor liver is, in a very large number of cases, very much ill-used. The epicure, the gormandiser, the beer drinker, overload and overwork it, and enlargement ensues. The livers of spirit drinkers shrivel and harden. The liver, like the heart and lungs, is a very busy organ. It is always at work. While the lungs take in two hogsheads and twenty gallons of air in one hour, and expel about the same amount of vitiated air, while the heart sends to the lungs one hogshead of blood per hour, and at the same time sends it coursing through the whole system, the liver has to receive and deal with all the venous blood. It separates from it the impurities and spent materials, which require to be thrown out of the system, and at the same time it secretes the bile which performs an important part in completing digestion in the duodenum, and in stimulating the action of the bowels.

EFFECTS OF ALCOHOL ON THE LIVER.

The following extract will show that small doses of alcohol produce disease of the liver. Dr. Gordon, Physician to the London Hospital, made the following remarks in his evidence before the Parliamentary

THE LIVER.



1. Healthy Section.
2. Nutmeg Degeneration.
3. Cheesy and Cancerous Degeneration.
4. Cancerous Tubercles.

Committee on Drunkenness: "When I was studying at Edinburgh, I had occasion to open a great many bodies of persons who had died of *various diseases*, in a population (as honourable members will bear in mind) much more renowned for sobriety and temperance than that of London; but the remarkable fact was, that *in all these cases there was, more or less, some affection of the liver;* and I account for it by the fact that these moral and religious people were in the habit of drinking a *small* quantity of spirits every day, say one or two glasses. They were not in any shape or form intemperate (!), and would have been *shocked at the imputation.* I had subsequently the opportunity of confirming my observations in the West Indies, where the practice prevails of taking small quantities of spirits, not at all amounting to intoxication; *but in all these cases there was*, more or less, some affections of the liver."—(Parl. Rept., p. 196.)

What Dr. B. W. Richardson says on this subject in the sixth Cantor Lecture may be taken as the latest verdict of science: "The organ of the body that perhaps the most frequently undergoes structural changes from alcohol is the *liver.* The capacity of this organ for holding active substances in its cellular parts is one of its marked physiological distinctions. In instances of poisoning by arsenic, antimony, strychnine, and other poisonous compounds, we turn to the liver, in conducting our analyses, as if it were the central depôt of the foreign matter. It is practically the same in respect of alcohol. The liver of a confirmed alcoholic

is probably never free from the influence of the poison; it is too often saturated with it."

"The effect of the alcohol upon the liver is upon the minute membranous or capsular structure of the organ upon which it acts to prevent the proper dialysis and free secretion. The organ at first becomes large from the distention of its vessels, the surcharge of fluid matter, and the thickening of tissue. After a time there follow contraction of membrane, and slow shrinking of the whole mass of the organ in its cellular parts. Then the shrunken, hardened, roughened mass is said to be 'hob-nailed,' a common, but expressive term. By the time this change occurs, the body of him in whom it is developed is usually dropsical in its lower parts, owing to the obstruction offered to the returning blood by the veins, and his fate is sealed."

"Now and then, in the progress to this extreme change and deterioration of tissue, there are intermediate changes. From the blood, rendered preternaturally fluid by alcohol, there may transude, through the investing membrane, plastic matter which may remain, interfering with natural function, if not creating active mischief. Again, under an increase of fatty substance in the body, the structure of the liver may be charged with fatty cells, and undergo what is technically designated fatty degeneration. I touch with the lightest hand upon these deteriorations, and I omit many others. My object is gained if I but impress you with the serious nature of the changes that in this one organ alone follow an excessive use of alcohol."

DIABETES AND THE LIVER.

"In the course of the early stages of deterioration of function of the liver from organic change of structure, another phenomenon, leading speedily to a fatal termination, is sometimes induced. This new malady is called diabetes, and consists in the formation in enormous quantity within the body of glucose or grape sugar, which substance has to be eliminated. The injury causing this disease through the action of alcohol may possibly be traced back to an influence upon the nervous matter; but the appearance of the phenomenon is coincident with the derangement of the liver, and I therefore refer to it in this place."

There are many who honestly believe that more people die premature deaths from over-eating and improper diet than from drinking intoxicating drinks. The big dinners of the aldermanic stamp have a great fascination for some. To such men they are a real danger. It is very hard on the stomach and liver to have to dispose of the conglomeration of varieties which are served up at those big feeds. Some years ago a wealthy German merchant in Manchester, who was a great gormandiser, and who was always complaining of not being well, invited his doctor to dinner one evening. The doctor, knowing his weakness, requested the butler to put the same quantity of food and drink into a good-sized mug as his master consumed. Before the party broke up the host complained of not feeling well; the

doctor had the mug brought into the room. He stirred up the heterogeneous mass, showed it to him, and asked him how he could expect to be well, having swallowed such an enormous mixture.

THE PENALTIES OF VIOLATED LAW.

There is no avoiding the penalty for wrong doing, be it physical or moral; there is no cheating nature; strong men may for a time seem to transgress the laws of health with impunity, the penalty is sometimes long deferred, but it comes certainly and surely. When in the form of apoplexy it comes *suddenly;* when through a diseased stomach or liver it comes *slowly.* A few years ago a giant of a Manchester alderman, who had been very fond of dining out, was five or six years in dying of disease of the liver. He was a man of sufficient vitality to have lived forty years longer with suitable and rational regimen. We have seen other aldermen and many well-to-do people cut down in the prime of life, and if cautioned that they were filling up too much—getting the skin too tight—they would smile triumphantly, as much as to say "you do not know anything of the pleasures of a jolly good dinner!" When those diners-out get fat and bulky and rubicund in the face, a passer-by may eye them and think them the picture of health, whereas they are liable to be stricken down by paralysis any day, to be helpless and perhaps imbecile the remainder of life. Cato said: "It is hard to dispute with men's stomachs

which have no ears." But what about man's reasoning powers and his wisdom? An old writer says: "It is a mistake to call man a reasoning animal;" it would be more correct to say that "he is an animal capable of reasoning." So long as men allow a morbid or depraved appetite to take the place of reason and common sense, so long will life be unnecessarily short.

EVILS OF FASHION IN HABITS OF LIFE.

Whatever may be said of Darwin's theory of the origin of species, the missing link has not yet been found. Man is too proud to admit that he has sprung from the monkey, but he has evidently a large proportion of the ape in his nature. Aping is not confined to any one class. It runs through the whole of society; even the fair sex are not free from it. The freaks of fashion are proverbial. The "Grecian bend" and the "Alexandra limp" have had their day, but the "improver" still reigns.

The little barefooted, toddling urchins in the streets ape the boys in smoking, the boys the men, and the men ape one another. Even in the House of Commons a fine well-dressed member may sometimes be seen entertaining honourable members in a bumptious manner—aping a great orator. And so it is with the dietetic and drinking habits. It is very easy to fall into the beaten track, go with the stream, and avoid the trouble of *thinking*. Thus indeed it is that foolish customs are formed which injure health and shorten life.

FOUR INSTRUCTIVE DIAGRAMS.

The diagrams of the liver ought to be of service to those who are fond of what is termed *good living*, and also to dram drinkers.

No. 1 plate shows the healthy liver. It will be seen from the quotations, which are from reliable medical authorities, that the liver may be seriously diseased by the regular use of alcoholic drinks, even in small doses.

No. 2 plate shows the "Nutmeg Degeneration." Anyone going thus far, by indulgences in eating and drinking, should be careful not to go further, or the liver can never be restored to a healthy condition.

No. 3 plate shows the "Cheesy and Cancerous Degeneration." From such a disease there is no possibility of a cure.

No. 4 plate shows the advanced stage of Cancerous Tubercles, which also represents a hopeless case.

HEALTH AND CONGESTED POPULATIONS.

THE land laws, which were framed to keep the land in the hands of the few, have contributed materially to swell the town population. Of course, during the last forty years, free trade and good wages have also contributed to this result. The town populations are crowded together in sadly too small a space; they have to breathe impure air which is loaded with sulphur and small particles of dirt. On this matter of impure air, the following interesting paragraph from a Manchester daily paper appeared some time ago:—"Everyone recognises the fact of the omnipresence of dust. A book or paper cannot be left anywhere for a day, in towns not for an hour, without a visible film of particles settling upon it. But these, the presence of which is apparent to the ordinary sight, form but a small fraction of the almost countless dust fragments which even the cleanest air contains. Mr. John Aitken has constructed an ingenious apparatus by which he is enabled roughly to count the hitherto invisible particles, and the results he arrives at are, to say the least, a little startling. He found that a sample of morning air, caught after a rainy night had washed and cleared the atmosphere, contained more than half a million particles to every cubic inch. It is a wonder that

Mr. Aitken's discovery did not choke him, and that he did not finally expire before pushing experiment any further. Such, however, was not the case. With admirable equanimity he next examined a piece of air that was unsuspiciously floating past on a fine day when there had been no rain, and this he found to be four times as thickly populated with dust particles. By this time, we suppose, he was getting used to it, and was not in a condition to be alarmed by anything. So he selected an ordinary room where gas was burning, and captured a sample of air four feet from the ground. Each cubic inch of this, he tells us, contains thirty million bits of dust, while if you bottle up your air from a region near the ceiling, as he subsequently did, there are in the same space very nearly ninety million. Mr. Aitken will doubtless proceed to investigate submarine tunnels and smoking concerts." Besides the impurity of the atmosphere, the temptations of a large town are numerous and strong, and, consequently, self-control on the part of the people is more difficult; hence the necessity for greater caution, and for having for guidance principles founded on a firm and intelligent basis. People cannot transplant themselves at will from the town to the country, as Count Tolstoi did in Russia when he was sick and disgusted with the artificial life of the Court, and what was termed the best society. He went on the land to live a peasant life, in search of real happiness, and to try to live a good life in imitation of Christ. Count Tolstoi is perhaps the best man, the greatest *thinker* in Russia, and yet

he finds more true happiness as a peasant than a courtier. This good man's best, brightest, and greatest thoughts, as embodied in his writings, are prohibited in Russia showing that the *dark ages* have not yet passed away. When Count Tolstoi was a great general, ready to go out to battle to slaughter his fellow men, he was a great favourite at Court; but when his soul expanded, and he felt that he must live a good and virtuous life, and show a good example to his countrymen, he was placed under a *ban*. Most of the great thinkers and philanthropists, who have had the welfare of the people at heart, have advocated placing them on the land of their birth, that they might breathe pure air, and live a healthy, natural life.

John Ruskin says: "We once taught our youths to make Latin verses, and called them educated; now we teach them to leap and to row, to hit a ball with a bat, and then call them educated. Can they *plough*, can they *sow*, can they *plant* at the right time, or *build* with a steady hand? Is it the effort of their lives to be chaste, knightly, faithful, holy in thought, lovely in word or deed? Indeed, it is with some, nay, with many, and the strength of England is with them, and the hope; but we have to turn their courage from the toil of war to the toil of mercy; and their intellect from dispute of words to discernment of things; and their knighthood from the errantry of adventure to the state and fidelity of a kingly power."

THE VIRTUES OF MASTICATION.

BEFORE entering on the details of diet, it may be well to give some information about the teeth, and the necessity of thorough mastication of the food. It is many years since Dr. A. Combe published the "Physiology of Digestion," but on the matters he treats of there is no better work of reference. He wrote to instruct the people, and he made himself clearly understood. Some extracts from his valuable work will be of great service. Commencing with the infant, he says: "It is a curious fact that the infant is born with the rudiments of both sets of teeth in the jaw at the same time, although neither makes its appearance till long after birth. The permanent teeth lie in a line under the milk teeth, and it is from their growth causing the gradual absorption of the roots of the first teeth that the latter no longer retain their hold of the jaw, but drop out as soon as the others are ready to protrude. . . . The changes in the condition of the teeth may be taken to indicate clearly what species of food nature has intended for us at different ages. In early infancy, when no teeth exist, the mother's milk is the only nutriment required, and, in proportion as the teeth begin to appear, a small addition of soft farinaceous

food prepared with milk may be made with propriety, and gradually increased."

INJURIES TO THE TEETH.

"The teeth, being living parts, and at the same time endowed with a mechanical function, are liable to injury in both capacities. Being composed chiefly of earthy matter, such as phosphate and carbonate of lime, the contact of strong acids decomposes their substances, and lead to their rapid decay. Hence the whiteness produced by acid tooth powders and washes is not less deceitful than ruinous in its consequences. In swallowing the acid drops frequently prescribed by the physician they ought never to be allowed to come into contact with the teeth. They ought to be well brushed regularly twice a day, and kept thoroughly clean."

"The great source of injury to the teeth, however, both in childhood and in mature age, is disordered digestion. If the health be good, and the stomach perform its functions with vigour, the teeth will resist much exposure without sustaining injury. But if these conditions fail, they will rarely continue long unscathed. It is almost always from the latter cause that in infancy teething so often gives rise to serious constitutional disorders."

"Something more, however, than the mere action of the teeth and jaws is required to prepare the morsel for being swallowed. If we take a bit of dry biscuit or mealy potato into the mouth, and attempt to masticate it, we encounter at first no small difficulty from the

stiffness and resistance of the dry mass, and feel instinctively that it would be in vain to attempt to swallow it until moistened either by continued mastication or by the admixture of fluid from without. In ordinary states of the system, accordingly, a fluid called *saliva*, or *spittle*, is copiously secreted and poured into the mouth for this very purpose, and the process by which its due admixture with the contents of the mouth is accomplished is called the *insalivation* of the food."

"The degree of mastication required varies also according to the mode of life of the animal, and the digestibility of its food. Animal food, for example, being easy of digestion, requires less mastication than vegetable food, which is more difficult."

"This is so much the case, that most animals, which live on fresh vegetable matter, spend half their waking hours in *ruminating* or *remasticating* the food which they have already cropped and stored up for the purpose in one of their four stomachs. To this necessary act, in them, Providence seems to have attached a high degree of gratification, for the very purpose of insuring its regular performance. A certain degree of attention to taste, and to the pleasures of appetite, is both reasonable and beneficial; and it is only when these are abused that we oppose the intentions of nature."

THE PART "GASTRIC JUICE" PLAYS.

"The chief purpose of mastication is evidently the minute division of the aliment so as to admit of

its being easily acted upon by the gastric juice when received into the stomach. Gastric juice, in its purest form, and unmixed with anything except the small portion of mucus from which it can never be obtained entirely free, is described by Dr. Beaumont to be a clear, transparent fluid, without smell, slightly saltish (probably from the admixture of mucus), and very perceptibly acid. Its taste, he says, resembles that of thin mucilaginous water, wine, or spirits, and effervesces slightly with alkalies—a direct proof of its acid nature. It coagulates albumen, and is powerfully antiseptic, checking the progress of putrefaction in meat. When pure it will keep for many months; but when diluted with saliva, it becomes fetid in a few days."

"The most remarkable property of the gastric juice is unquestionably the power which it possesses of dissolving and reducing to the appearance of a soft thickish fluid mass everything in the shape of food which is submitted to its action while it exerts no perceptible influence on living or inorganic matter; for, so far as is yet known, nothing which is not organised, or which is still alive, can serve as nutriment for the animal frame. Water is the only inorganic body which is taken into the system for its own sake, and all mineral and other inorganic productions enter it as component parts of previously organised substances of either an animal or a vegetable nature."

"Even in man the gastric juice undergoes considerable modifications, not merely according to the

kind of aliment habitually used, but also according to the wants of the system, the season of the year, and the state of the health; so that, while sudden and great changes from one kind of diet to another are positively hurtful on the one hand, absolute uniformity is not less objectionable on the other."

"The gastric secretion, and the appearance of the villous coat, undergo great modifications during disease, and on this subject also Dr. Beaumont's observations are highly valuable because, instead of merely inferring, as others are obliged to do, he enjoyed the privilege of seeing with his eyes what was actually going on, in the course of his attendance on St. Martin."

THE NATURAL FOOD OF INFANTS.

Dr. Andrew Combe tells us that the mother's milk is the natural food for the infant. That is so, but an unhealthy mother does not give healthy milk. From this cause infant mortality in the town population is enormous. From a recent return out of the total number of children born in the United Kingdom, one-fourth die within eleven months; one-third die within twenty-three months; one-half before reaching eight years of age. In a recent return in "Proud Preston," out of every 1,000 children born, 233 died within twelve months. Blackburn came next with 209 out of every 1,000 born; Salford 197 out of every 1,000 born. This appalling rate of infant mortality tells a mournful tale, not only of mismanagement, but of misgovernment

both local and imperial. A great portion of this infant mortality is due to drunken mothers over-lying their children in bed. Proud Preston and Proud England ought to feel great humiliation at this awful slaughter of the innocents.

"Healthy, nourishing, and digestible milk can proceed only from a healthy and well-constituted parent; and it is against nature to expect that, if the mother impairs her health and digestion by improper diet, neglect of exercise, impure air, or unruly passions, she can, nevertheless, provide a wholesome and uncontaminated fluid as if she were exemplary in her observance of all the laws of health. It is a common mistake to suppose that, because a woman is nursing, she ought therefore to live very fully, and to add an allowance of wine, porter, or other fermented liquor to her usual diet." A child should not be overfed even by the mother's milk. After the child is weaned its food ought to be very light, and meal times ought to be observed; as the child advances in years the diet may be improved a little. It is a mistake to allow young children to have animal food.

THE NATURAL FOOD OF BOYS AND MEN.

Growing boys ought to have food containing a fair portion of bone-forming material. Oatmeal or wheatmeal porridge ought to form part of their diet. High-seasoned food or much animal food will cause irritation to the coating of the stomach. As boys are fond of and ought to be encouraged in out-door

exercise, plain wholesome food will satisfy them, espe cially as they have no artificial craving, and usually enjoy good health.

At twenty-five years of age man arrives at maturity, and if at that age the body is substantially built up, it only requires keeping in health and at the proper weight. Those who continue to add weight after that time make a great mistake; their study ought to be simply to keep the equilibrium, not to take more food and liquid than is necessary to supply the waste which is constantly going on. If the supply exceeds the waste, fatty degeneration commences.

ARTERIAL DEGENERATION.

ARTERIAL degeneration is very general. It is indeed one of the chief causes of premature death, bringing with it a great amount of suffering, and disabling men at a time of life when they ought to be in good working order. It does, therefore, seem strange that some eminent scientist has not taken the question up; for instance, if Professor Huxley were to speak out, he would awake a needed interest in this matter, which is truly one of life and death.

THE ARTERIES IN MIDDLE AGE.

Dr. Charles D. Hunter says: "No one dies now-a-days over fifty years of age without showing evident signs of arterial degeneration, and few reach forty perfectly free from it. It is not uncommon in young people; and in young children—infants, who die of atrophy or marasmus, it is almost invariable. Doubtless our pathologists are more numerous, and probably more exact, than they were fifty years ago; but it does seem as if this degeneration of tissue, this semi-death of some of our organs, were terribly more common than it used to be."

"There are many forms of degeneration, and whilst

the causes of most are very obscure, some are evidently due to faulty food. Many forms frequently co-exist, and seem at times to be but different stages of the same process, which gives hope that in avoiding one we may avoid all."

"One form of degeneration seems to be due to saline starvation. Physiologists have talked too much of the nitrogen and carbon of food, of which few can escape getting enough if they can get food at all. But of the other half dozen elements, all equally essential to life, and some more essential to health, we have heard but little since Liebig died. And yet some of these are the very elements which many who try to be well fed are starved in. Some are exceedingly soluble, and thus easily lost by careless or foolish cookery, and others reside most in or near the skin or husk, which a false taste excludes from our tables."

DEGENERATION OF A RHEUMATIC TYPE.

"Those of a rheumatic type suffer most, because there is in them an inherited tendency to the formation of uric acid and other poisons due to malassimilation. Now, experimentally (not on dumb animals, but on men), it is found that potash, and especially its organic salts, has great power to dissolve out and remove from the body those gouty and rheumatic blood-poisons. Therefore, those of this type exposed to saline starvation are liable to the many-headed sufferings of those diseases—dyspepsia, nervous irritability, pains in any

and every part of the body, neuralgia, sciatica, lumbago, gravel, rheumatic fever, heart disease, and calculus. But I must stop. A page could easily be filled with a list of the Protean maladies due to this condition."

THE ARTERIES IN OLD AGE.

Dr. De Lacy Evans, speaking of arterial degeneration, says: "The arteries in old age become thickened and lessened in calibre from fibrinous, gelatinous, and earthy deposits. This is more easily detected in the larger vessels, but all, even to the most minute sub-divisions, undergo the same gradual change. Thus, the supply of blood to the brain becomes less and less; hence the diminution in size of the organ from the prime of life to old age; hence the functions of the brain become gradually impaired; the vigorous brain of middle life gradually giving place to loss of memory, confusion of ideas, inability to follow a long current of thought, notions oblivious of the past and regardless as to the future, carelessness of momentary impressions, softening of the brain, and that imbecility so characteristic of extreme age."

Copland says: "The arteries most commonly found ossified are the internal carotids and the basilar; but the circle of Willis, and the vessels departing from it, as well as the arterial ramifications which appear between the convolutions and come out upon the surface, often participate more or less in this morbid state. Cartilaginous degeneration is still more extensive, and seems

to precede the ossific deposits. Cartilaginous and ossific formations in the coats of arteries of the brain occasion irregular distribution of blood, and interrupted or imperfect supplies of this fluid to some parts of the organ, disposing to aneurismal dilatations, to rupture, and, consequently, to the production of apoplexy and paralysis."

"*Ossification* is detected (with the naked eye) only in the *arteries;* but it occurs in them very frequently, and to a very great extent particularly in advanced life."

"The cerebral arteries of old persons are frequently found studded with cartilaginous and osseous laminæ."

"The ossification of arteries has been ascribed by many authors to *slight* chronic inflammatory action. The experiments of M. Rayer and M. Cruveilheir seem to confirm this inference, as an *occasional* occurrence at least, particularly in the fibrous and cartilaginous structures, increased vascular action of these structures, artificially excited, being generally followed by ossiform depositions; but in a number of cases, particularly in those where the deposit takes place in the cellular tissues, *no inflammatory action can be detected* previously to this change; besides, increased vascular action frequently exists, without being attended with ossiform depositions. This lesion, therefore, cannot be altogether ascribed to this cause, although frequently resulting from it in a certain order of tissues. It would be correct to consider it merely as a consequence of disorder of the *natural* process of nutrition and

secretion. . . . But to what cause is this disorder of the nutritive function to be imputed, particularly when it occurs in parts which have *not evinced any sign of inflammatory action*, as in the cellular tissue connecting the internal coats of *arteries?* The importance of this inquiry may appear from the *very great proportion of persons in advanced years* who are affected in some organ or tissue with this lesion, and from the remarkable part it performs in the production of a number of diseases of the most dangerous description."

Hooper says: "*After the age of fifty*, the walls of the blood-vessels are very liable to 'degeneration.' The aorta, in particular, becomes dilated, the elasticity of its walls impaired, and its inner surface roughened by large, irregular, whitish, elevated patches of morbid matter, lying immediately beneath a superficial layer of the inner coat, and composed of a mixture of *earthy and fatty matter.* . . . In the *smaller* arteries, the ossification proceeds much more uniformly, and they become at last more or less completely converted into *smooth bony tubes.* The capillaries are equally liable with the arteries to degeneration."

THE STIFFENING OF THE LIMBS IN OLD AGE.

John Wesley, A.M., knew something of the depositing of limy and earthy matter. In "Natural Philosophy," first volume, page 125, he says: "But what is properly a natural death? From the very

birth, every vessel in the human body grows stiffer and stiffer by the adhesion of more and more earthy particles to its inner surface. Not only solid food supplies it with these, but every fluid that circulates through it. Hereby more and more of the small vessels are so filled up, as to be no longer pervious. In proportion, the coats of the larger vessels grow harder, and their cavities narrower. Hence the dryness and stiffness of all the parts which are observable in old age. By this means, more and more of the vessels are destroyed, the finer fluids secured in less quantity, the concoctions weakened, and the reparation of the decayed and injured parts prevented. So that only the coarser juices continue to run slowly through the larger vessels. Soon these also not only become narrow, but stiff, bony, and unelastic, till even the great artery, having lost its spring, can propel the blood no longer. And then follows death by old age, which is purely natural death. But this is a very rare case, it is seldom life is so long protracted, the lamp of life being easily blown out, when it burns so feeble a flame. So that the age of man seldom exceeds three score years and ten before dust returns to dust."

John Wesley seems to have partially known what the clogging up of the arteries was, but he did not know enough to suggest any remedy. He calls it "natural death," it really is *premature* death. The medical practitioners, as a rule, take very little notice of arterial degeneration, hence it is that vast numbers die off in mid-life who yet had sufficient constitutional power and

vitality to have carried them on to a good old age. Several medical writers have taken this subject up, but only Dr. Lacy Evans, M.R.C.S.E., among English medical men, has pointed out and defined the remedy for arterial degeneration. Those who wish to go fully into the subject ought to study his work—"How to Prolong Life."

If mankind are to reach near to the full term of life, remain healthy, be useful, retain their faculties, and enjoy life to the end, they will have to make great changes in their diet and habits, they will have to depart from some of the pernicious and health-destroying customs of the present day. "Man, know thyself." If man does not know what to eat and drink, or if he is too weak-minded to be satisfied with such food and drink as is best for health and long life, where is the use of his superior intelligence and knowledge?

DIET IN RELATION TO ACTIVITY AND AGE.

SIR Henry Thompson contributed an article on this subject to the May (1885) number of the *Nineteenth Century*. He said:—

"I have for some years past been compelled by facts which are constantly coming before me to accept the conclusion that more mischief in the form of actual disease, of impaired vigour, and of shortened life, accrues to civilised man, so far as I have observed in our own country and throughout Western and Central Europe, from erroneous habits in eating than from the habitual use of alcoholic drink, considerable as I know the evil of that to be. I am not sure that a similar comparison might not be made between the respective influence of those agencies in regard of moral evil also."

"To an inhabitant of the Arctic Circle, for example, a vegetarian diet would be impracticable, because the elements of it cannot be produced in that region; and were it possible to supply him with them, life could not be supported thereby. Animal food in large quantity is necessary to sustain existence in the low temperature to which he is exposed. But I desire to oppose any scheme for circumscribing the food resources of the world, and any form of a statute of limitations to our diet, not merely because it can be proved inapplicable,

as in the case of the Esquimaux under certain local and circumscribed conditions, but because I hold that the principle of limiting mankind to the use of any one class of foods among many is in itself an erroneous one. Thus, for example, while sympathising to a large extent myself with the practice of what is called "vegetarianism" in diet, and knowing how valuable the exclusive, or almost exclusive, use of the vegetable kingdom may be for a considerable number of the adult population of our own and other countries in temperate zones, and for most of that which inhabits the torrid zone, I object strongly to a dogmatic assertion that such limitation of their food is desirable for any class or body of persons whatever."

"As we increase in age—when we have spent, say, our first half century—less energy and activity remain, and less expenditure can be made; less power to eliminate is possible at fifty than at thirty, still less at sixty and upwards. Less nutriment, therefore, must be taken in proportion as age advances, or rather as activity diminishes, or the individual will suffer. If he continues to consume the same abundant breakfasts, substantial lunches, and heavy dinners, which at the summit of his power he could dispose of almost with impunity, he will in time certainly accumulate fat or become acquainted with gout or rheumatism, or show signs of unhealthy deposit of some kind in some part of the body, processes which must inevitably empoison, undermine, or shorten his remaining term of life. He must reduce his 'intake,' because a smaller expenditure is an enforced condition of existence. . . Even

our drink must now be nutritious. Most persons might naturally be aware that the primary object of drink is to satisfy thirst, which means a craving for the supply of water to the tissues—the only fluid they demand and utilise when the sensation in question is felt. Water is a solvent of solids, and is more powerful to this end when employed free from admixture with any other solid material. It may be flavoured, as in tea and otherwise, without impairing its solvent power, but when mixed with any concrete matter, as in chocolate, thick cocoa, or even with milk, its capacity for dissolving —the very quality for which it was demanded—is in great part lost. So plentiful is nutriment in solid food, that the very last place where we should seek that quality is the drink which accompanies the ordinary meal."

"Nothing is more common at this period of life than to hear complaints of indigestion experienced, so it is affirmed, because mastication is imperfectly performed for want of teeth. The dentist deftly repairs the defective implements, and the important function of chewing the food can be henceforth performed with comfort. But, without any intention to justify a doctrine of final causes, I would point out the significant fact that the disappearance of the masticating powers is mostly coincident with the period of life when that species of food which most requires their action—namely, solid animal fibre—is little, if at all, required by the individual. It is during the latter third of his career that the softer and lighter foods, such as well-cooked cereals, some light mixed animal and vegetable soups, and also fish

for which teeth are barely necessary, are particularly valuable and appropriate. And the man with imperfect teeth who conforms to nature's demand for a mild, non-stimulating dietary in advanced years will mostly be blessed with a better digestion and sounder health than the man who, thanks to his artificial machinery, can eat and does eat as much flesh in quantity and variety as he did in the days of his youth."

There is, Sir Henry remarks, a very common term, familiar by daily use, which conveys unmistakeably to everyone painful impressions regarding those who manifest the discomforts indicated by it—namely, the term indigestion.

"The 'martyr to indigestion' may perhaps be surprised to learn that nine out of ten persons so affected are probably not the subjects of any complaint whatever, and that the stomach at any rate is by no means necessarily faulty in its action—in short, *that what is popularly termed 'indigestion' is rarely a disease in any sense of the word, but merely the natural result of errors in diet.* For most men it is the penalty of conformity to the eating habits of the majority; and a want of disposition or of enterprise to undertake a trial of simpler foods than those around them consume, probably determines the continuance of their unhappy troubles. In many instances it must be confessed that the complaint, if so it must be called, *results from error, not in the quality of the food taken, but in the quantity.* Eating is an agreeable process for most people, and under the influence of very small tempta-

tion, or through undue variety furnishing a source of provocation to the palate, a considerable proportion of nutritious material above what is required by the system is apt to be swallowed."

"And it is an experience almost universally avowed, that the desire for food is keener, that the satisfaction in gratifying appetite is greater and more enjoyable on the part of the *general light feeder than with the almost exclusively flesh-feeder.* For this designation is applicable to almost all those who compose the middle-class population of this country. They consume little bread and few vegetables; all the savoury dishes are of flesh, with decoctions of flesh alone for soup. The sweets are compounds of suet, lard, butter, eggs, and milk, with very small quantities of flour, rice, arrowroot, &c., which comprise all the vegetable constituents besides some fruit and sugar. *Three-fourths at least of the nutrient matters consumed are from the animal kingdom. A reversal of the proportions named—that is, a fourth only from the latter source with three-fourths of vegetable produce—would furnish greater variety for the table, tend to maintain a cleaner palate, increased zest for food, a lighter and more active brain, and a better state of health* for most people not engaged on the most laborious employments of active life. While even for the last named, with due choice of material, ample sustenance in the proportions named may be supplied. For some inactive, sedentary, and aged persons the small proportion of animal food indicated might be advantageously diminished."

NUTRITIVE VALUE OF FOODS.—LETHEBY.

Proportion of Salts to Nitrogenous Constituents (C. De L. E.).	Substances 100 parts.	Water.	Albumen, Fibrin, &c.	Starch, Sugar, &c.	Fat.	Salts.
1 in 17·5	Human Milk ...	89	3·5	4·2	3·0	0·2
1 in 6·4	Cow's Milk ...	86	4·5	5·0	4·1	0·7
,,	Skimmed Milk ...	87	4·5	5·0	2·7	0·7
,,	Buttermilk... ...	87	4·5	5·0	0·5	0·7
1 in 9·5	Beef and Mutton	73	19·0	—	5·0	2·0
1 in 31·6	Veal	77	19·0	—	1·0	0·6
1 in 17·5	Poultry	74	21·0	—	3·0	1·2
,,	Bacon	20	0·8	—	70·0	1·3
1 in 6·4	Cheese (Cheddar)	36	29·0	—	30·0	4·5
1 in 9·0	Cheese (skimmed)	44	45·0	—	6·0	5·0
,,	Butter	15	—	—	83·0	2·0
1 in 9·3	Eggs	74	14·0	—	10·5	1·5
1 in 12·5	White of Egg ..	78	20·0	—	—	1·6
1 in 12·3	Yolk of Egg ...	52	16·0	—	30·0	1·3
1 in 15·8	White Fish ...	79	19·0	—	1·0	1·2
1 in 12·1	Salmon	78	17·0	—	4·0	1·4
1 in 7·6	Eel	80	10·0	—	8·0	1·3
1 in 6·4	Wheat Flour ...	15	11·0	70·0	2·0	1·7
1 in 5·0	Barley Meal ...	15	10·0	70·0	2·4	2·0
1 in 4·0	Oat Meal	15	12·0	62·0	6·0	3·0
1 in 5·0	Rye Meal	15	9·0	66·0	2·0	1·8
1 in 5·2	Indian Meal ...	14	9·0	65·0	8·0	1·7
1 in 2·3	Rice	14	7·0	76·0	0·3	0·3
1 in 6·3	Haricot	19	23·0	45·0	3·0	3·6
1 in 7·3	Peas	13	22·0	58·0	2·0	3·0
1 in 6·6	Beans...	14	24·0	44·0	1·4	3·6
1 in 12·6	Lentils	14	29·0	44·0	1·5	2·3
1 in 3·9	Wheat Bread ...	44	9·0	49·0	1·0	2·3
1 in 3·5	Rye Bread ...	48	5·0	46·0	1·0	1·4
1 in 2·8	Potatoes	74	2·0	23·0	0·2	0·7
1 in 2·8	Green Vegetables	86	2·0	4·0	0·5	0·7
	Arrowroot	18	—	82·0	—	—

TIME FOR DIGESTING FOOD.

We are indebted to Dr. Beaumont for this information. His experiments on Alexis St. Martin enabled him to compile the table, which is, of course, condensed.

		H. M.
Pork: fat and lean	Roasted	5 15
,, recently salted	Boiled	4 30
,, ,, ,, ...	Fried	4 15
Beef: fresh lean	Roasted	3 0
,, dry	,,	3 30
,, steak	Broiled	3 0
,, with salt only	,,	2 45
,, *with mustard, &c.*	,,	3 30
Mutton: fresh	Roasted	3 15
,, ,, ...	Broiled	3 0
,, ,, ...	Boiled	3 0
Fowls: domestic	,,	4 0
,, ,, ...	Roasted	4 0
Ducks: ,, ...	,,	4 0
,, wild	,,	4 30
Turkey: domestic...	,,	2 30
Goose	,,	2 30
Veal: fresh	Fried	4 30
Chickens: full grown	Fricassé	2 45
Trout (Salmon): fresh	Boiled	1 30
,, ,, ,, ...	Fried	1 30
Salmon: salted	Boiled	4 0
Oyster: fresh	Raw	2 55
Soups (Beef), vegetable, and bread	Boiled	4 0
,, (marrow bones)	,,	4 15
,, (mutton)	,,	3 30

		H.	M.
Chicken Soup	Boiled	3	0
Hash meat and vegetable	Warmed	2	30
Sausage: fresh	Broiled	3	20
Rice	Boiled	1	0
Sago	,,	1	45
Tapioca	,,	2	0
Barley	,,	2	0
Milk	,,	2	0
,, ...	Raw	2	15
Apples: sour and hard...	,,	2	50
,, mellow	,,	2	0
,, sweet	,,	1	30
Parsnips	Boiled	2	30
Beet	,,	3	45
Carrot	,,	3	15
Turnip	,,	3	30
Potatoes...	,,	3	30
,, ...	Roasted	2	30
,, ...	Baked	2	30
Cabbage (head)	Raw	2	20
,, with vinegar	Boiled	4	30
,, ,, ...	Raw	2	30
Bread (wheaten)	Fresh baked	3	30
Eggs (fresh)	Hard Boiled	3	30
,, ,, ...	Soft Boiled	3	0

MR. ISAAC HOLDEN, M.P.

(See frontispiece.)

PARAGRAPHS have appeared in the papers from time to time into which, however, errors have crept, giving some account of the regimen and system of diet which Isaac Holden, Esq., M.P., has for many years practised. These paragraphs have excited considerable interest, as Mr. Holden is well-known. So many commercial men are engaged in the race for wealth, that anyone who is known, like Mr. Holden, to have been financially successful, becomes a noted character. But Mr. Holden must not be classed amongst those who have been striving for riches exclusively. Whatever wealth Mr. Holden may have accumulated it has fallen to him as the result of his great inventions in perfecting the wool-combing machine, which has completely revolutionised the worsted trade of Bradford and district. Some of the paragraphs alluded to describe Mr. Holden as being slightly built and short of stature, and as not being a strong man, but say nothing of his intellectual power, which is the distinguishing feature of the man, and the key to his success. He may not have been at any university, but he is no stranger to the classics, and the great variety of knowledge which he possesses has been so well

digested that it is at his finger ends; and when in conversation in his extensive library he has occasion to refer to any book, he can turn to the very page at once. Though he has not a large body he has a large well-developed and well-stored head, which accounts for his successes. And Doctor Watts, as we know, once wrote—

> Were I so tall to reach the pole,
> Or grasp the ocean in my span,
> I must be measured by my soul,
> The mind's the standard of the man.

It is possible that Mr. Holden's head, like Mr. Gladstone's, has enlarged since he was sixty years of age. At any rate the inventive faculty in him is still active. Very recently he patented an important invention. Many doubts have been expressed about the enlargement of Mr. Gladstone's head during the last twenty years; but I believe a searching inquiry amongst men of "light and leading" would reveal some curious facts in this respect. There is no reason why the brain should not develop and enlarge with active, healthy exercise so long as the body is sound, healthy, and vigorous. Mr. Holden's greatest achievements certainly have been made at a time of life when men are usually on the decline.

Mr. Holden's heart is as large and expansive as his brain. He is a true reformer; he has no sympathy with class privileges, nor with the laws which were made in former times for the supposed benefit of the great landowners, but really to the injury of the whole

people as well as frequently to themselves. If he were Prime Minister of England, the laws relating to the traffic in intoxicating drinks would receive immediate consideration, and the misery caused by the drinking customs would very soon be lessened.

SOME OPINIONS OF MR. HOLDEN.

At the last anniversary of the Yorkshire Band of Hope Union, Mr. Holden presided at the great public meeting in the evening, and said: "It had given him great pleasure to be present that evening, and he had felt that it would have been very well if a number of other members of Parliament could have been present and have heard the stirring, able, and well-reasoned speech of Dr. Lees. They had been engaged for a long time in the great work of promoting temperance, but they must have felt that the greatest object which they had to accomplish was to have legislation on the lines of their principles. (Hear, hear.) So long as he had been the representative of that division, it had given him great satisfaction to vote on these lines on temperance questions. (Applause.) But the work they were endeavouring to accomplish was worthy of their greatest efforts, was worthy of the most elevated intellect, of the purest nature, of the consummate good sense of the best men of our nation. The moral question and the physiological question had been well placed before them. No one could overrate the value of the temperance movement in reference to the morals

and health of our people. The moral and physiological questions were now conceded by those men best able to judge of these two great departments of human life and human character. (Applause.) He might refer for a minute to the economic side of the question, to the immense economy that would be effected in the country by the entire cessation of the consumption of alcoholic liquors. We heard now-a-days a great deal about capital, of the evils and mischief of capital, of the pernicious influence of capital upon the industrial workers in our country. Well, after all, when it was looked at fairly, capital was the savings of the country, and if the capital of the country was saved in every possible way it would nearly all fall into the hands of the working classes of the country. And if they taught our young people to be economists by total abstinence from this expensive indulgence they would lead them to economies in other directions. The capital of the country and of the world must essentially and necessarily increase. Capital consisted of houses, public works, &c., as well as precious metals. This capital must go on increasing, and it must fall into some hands. And how were they to get it into the hands of the workers except by economy? If this great object could be accomplished, if they could save anything like the amount of money which was now spent in drink, and if other economies could be effected, the capital of the world would fall into the hands of the working classes if they were wise enough to save what they got. It was *desired* by *him* and by *others* who had been *cursed* by

the possession of this capital—(laughter),—that the workers should endeavour to possess this capital and employ it in promoting their own industries. As a member of the House of Commons, he had to look at this matter from a rather *broad point of view*, but he looked upon the value of their work in the very highest sense. It *enriched* the country as well as *ennobled* it, it *elevated* its *morals*, and it *strengthened* the *health* of the people, and, therefore, it would always be his pleasure as their representative to support all legislative attempts to carry out their views." (Loud applause.)

This speech has the true patriotic ring in it. It will be seen that Mr. Holden wishes the working classes to acquire good sober habits, and to be in a position to help themselves. Self help is the best help. If the people would send more such members to Parliament, the drink curse would soon be dealt with. Mr. Holden is a strong advocate for the education of the people. The technical school in Keighley, of which he is the President, is one of the best in England, and his substantial support has enabled the directors to make it what it is. Whenever his life is written—and such a life is worthy the highest literary talent—it will be seen that he is cast in a different mould to the ordinary run of successful commercial men.

A MASTER OF THE ART OF HOW TO LIVE.

It would be difficult to find a dozen men in the United Kingdom who have studied and mastered

the subject of *diet*, or the science of How to Live, as Mr. Holden has, and perhaps not one who has carried out so strictly what he believes to be the correct diet for his age. Coming in contact myself with a large number of people who are suffering from limy and earthy deposit, and others afflicted with rheumatism and gout, who complained that fruit produced indigestion, and having heard Mr. Holden say that he had laboured under the same difficulty, I inquired of him how he got the better of it. He replied as follows:—

Oakworth House, Keighley,
January 3rd, 1890.

To Mr. Joseph Constantine,
Oxford Street, Manchester.

My dear Friend,—Pardon my delay in writing to you in reply to your letter—having been much occupied.

The remark you refer to was made to me by a doctor in Nice, many years ago. He recommended to me the orange cure, when I told him that the orange did not agree with my digestion. On inquiring, he found that I had been accustomed to eat the orange between meals, or as dessert after dinner.

He wished me not to mix fruit with meals in the form of dessert, but to eat it only as a meal with farinaceous and vegetable food.

I followed his directions, and I soon found I could live on oranges and other fruit, and vegetables with bread.

It is well known that in some cases the stomach has to acquire the habit of digesting fruit and

vegetable meals, and it soon becomes reconciled to such diet.

My practice has been for a long time to take a light breakfast of biscuit (whole wheat meal) and fruit, sometimes with frizzled fat bacon (first boiled to clear it of salt) with the *lean* part extracted. Meat, of any kind—beef, mutton, fish, fowl or game—only to dinner, and for a third meal, vegetables, with fruit and biscuit. All, without drinking any liquid, except after dinner I usually take very diluted coffee, kept warm, and sipped to a quiet smoke.

I carefully avoid repletion and satiety. The dinner of meat may be at noon, or in the evening, as is most convenient to me.

On this diet I have, I think, effectually purged my system of gout.

When thirsty, and in the night time, I drink "Salutaris" (distilled) water. I value fruit diet because it contains much of alkaline salts, and extremely little lime, which latter abounds in cereals and root vegetables. Lime in food and water, if in excess beyond the actual requirements of the bony structure, ossifies and clogs the fine capillary blood vessels (arterial degeneration), which is the real cause of natural death. But long before this last catastrophe the senses become blunted and the intellect impaired in advancing years, as De Lacy Evans shows in his admirable book on "How to Prolong Life."

I am, sir, yours truly,

ISAAC HOLDEN.

It might seem strange that Mr. Holden should be troubled with gout, he having been of abstemious habits through life. The explanation is that at one time, after having completed perhaps his greatest invention, in the course of which he had become mentally and bodily prostrated, he yielded under medical treatment to a generous living which produced gout.

MR. HOLDEN'S REGIMEN.

Mr. Holden's outline of his diet, and the reason he gives for such diet, are quite right, as may be gathered from the following extracts :—

" Fruits, as distinct from vegetables, have the least amount of earthy matter. Most of them contain a large quantity of water, but that water in itself is of the purest kind—a distilled water of nature, and has in solution vegetable albumen. Most fruit contain *alkalies*, generally potash, which, on the combustion of the acids (citric, tartaric, &c.), are left in solution in the blood. Alkalies increase the solubility of albumen and fibrin, and therefore tend to prevent undue fibrinous accumulation in or around the smaller blood-vessels. Some fruits contain *tannic acid*, which acts beneficially on the system by tanning or hardening the albuminous and gelatinous structures, rendering them more leatherlike and less susceptible to the corroding action of atmospheric oxygen, therefore less liable to waste or decay."

Additional evidence could be piled up from De Lacy Evans' book and other writers in favour of fruit diet

for preventing arterial degeneration, but the above is sufficient. I may add that if a little bread is eaten with the fruit it necessitates more thorough mastication, it helps the secretion of the gastric juice, and keeps the stomach in health. Wheat meal, unfermented bread, or biscuits are the best.

It will help those who are wishful to change their diet at once to learn what Mr. Holden's supper, or third meal, consisted of a few evenings ago, taken from 7-0 to 7-30. First, a little celery soup with a good sprinkling of celery in it, two roasted apples, next a few grapes, and then two oranges, all eaten with a little unfermented wheat-meal biscuit. When in season he eats salads pretty freely at the third meal. There are many who may follow Mr. Holden's diet to the letter; others who find it necessary to modify it, as the change is made and the stomach and the bowels have got accustomed to it. With care and caution any little difficulty which may be experienced will soon be overcome.

HIS DAILY WALKING.

Mr. Holden will be eighty-three next May. The other day he walked from 10 to 12-30 at a good pace and after the walk seemed quite as fresh as a gentleman about half his age who had accompanied him. He went into his private Turkish bath, which is always kept warm, took a warm and cold shower and changed his underclothing; and he was quite fresh and sprightly the whole of the afternoon. He walks ten or twelve

miles each day, pays little regard to the weather—it must be very inclement to prevent him from going out. He takes one Turkish bath a week, and if the least out of sorts two or three.

TEMPERATURE INDOORS.

The fact ought to be stated that Mr. Holden's mansion is thoroughly and efficiently warmed and ventilated throughout, the temperature in the bedrooms in winter is 60 Fahr.; and the air in every room is changed every half hour. In carrying out the scheme Mr. Holden has brought his genius to bear, and right well has he executed it. A very considerable experience on warming and ventilating has not brought to our notice any place equal in those particulars to Oakworth House. Of course it has been an expensive matter, but the result is perfection, and gives not only supreme comfort, but length of days to those who reside there. A pure genial and equable temperature is what all aged people ought to have, both in the living rooms and bedrooms.

ANOTHER REMARKABLE OCTOGENARIAN.

The following interesting account is taken from *The Star:*—"Dr. Oliver Wendell Holmes (the famous American poet and essayist, and once a practising physician) thinks that he owes his good health and the retention of his mental vigour in his eighty-first year to the extreme care he has long taken of himself. Never

robust, he was still wiry in his earlier and maturer life; but since he reached seventy his hygienic vigilance is unceasing. The rooms that he daily occupies are equipped with barometers, thermometers, aerometers—every kind of instrument, in short, to prevent his incurring the slightest risk of taking cold. He knows that pneumonia is the most formidable foe of old age, and he is determined to keep it at a distance, if possible. He never gets up until he knows the exact temperature, during winter, or takes his bath without having the water accurately tested. He lives by rule, and the rule is inflexible. His time is scrupulously divided—so much allotted to reading, so much to writing, so much to exercise, so much to recreation. His meals are studies of prudence and digestion. He understands the specific qualities of ordinary foods and never departs from the severest discretion in eating. One might think that it would be a serious infliction to keep up existence by such precise, unvarying methods. But the little doctor enjoys them, having settled firmly into these habits years ago. Philosophic as he is about death, he has an eager curiosity to see how long he can live by following the laws he has vigorously prescribed for himself. He has long had vigorous theories on the subject of health and longevity, and he relishes experimenting upon himself. He thinks sometimes that he may attain a hundred, which he would dearly like, if he could retain, as he has retained thus far, the full possession of all his faculties."

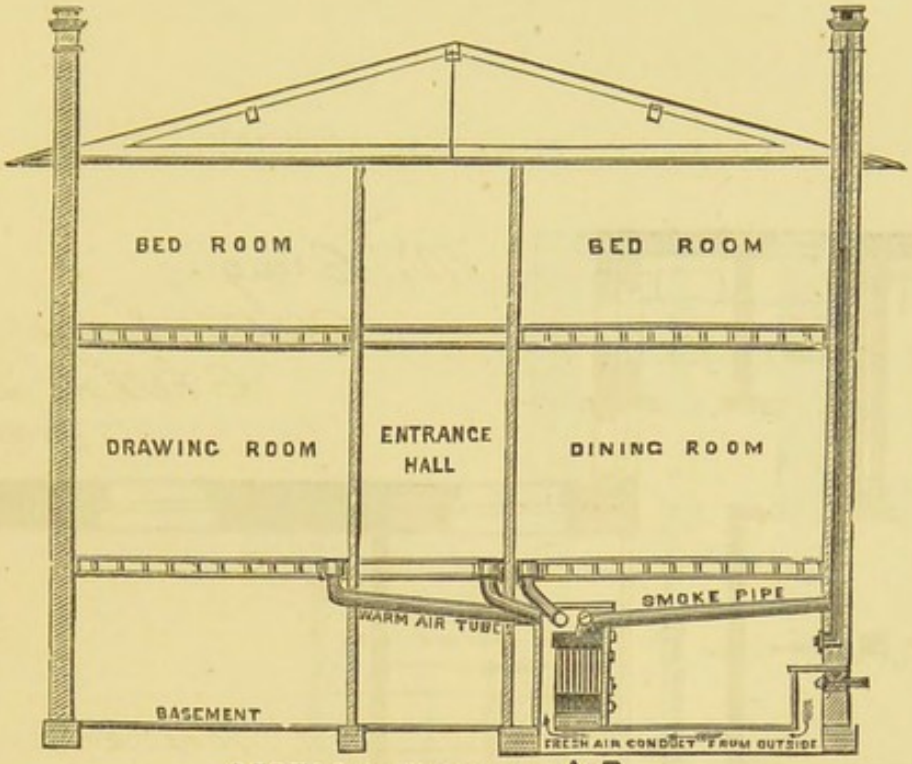
PURE AIR AND A WARM DRY HOUSE.

AFTER fifty years of age, if a man wishes to remain healthy and active and be free from aches and pains, he must avoid chills and severe colds. A deep-rooted cold is a frequent cause of congestion or inflammation of some vital organ, which may, and often does, terminate fatally. Living in a genial temperature, and with a diet suitable to the years any one has reached, be it fifty, sixty, eighty, or ninety, there may be a reasonable expectation of reaching the full term of life. Poisonous air is as dangerous to health and life as poisonous food or chilled air.

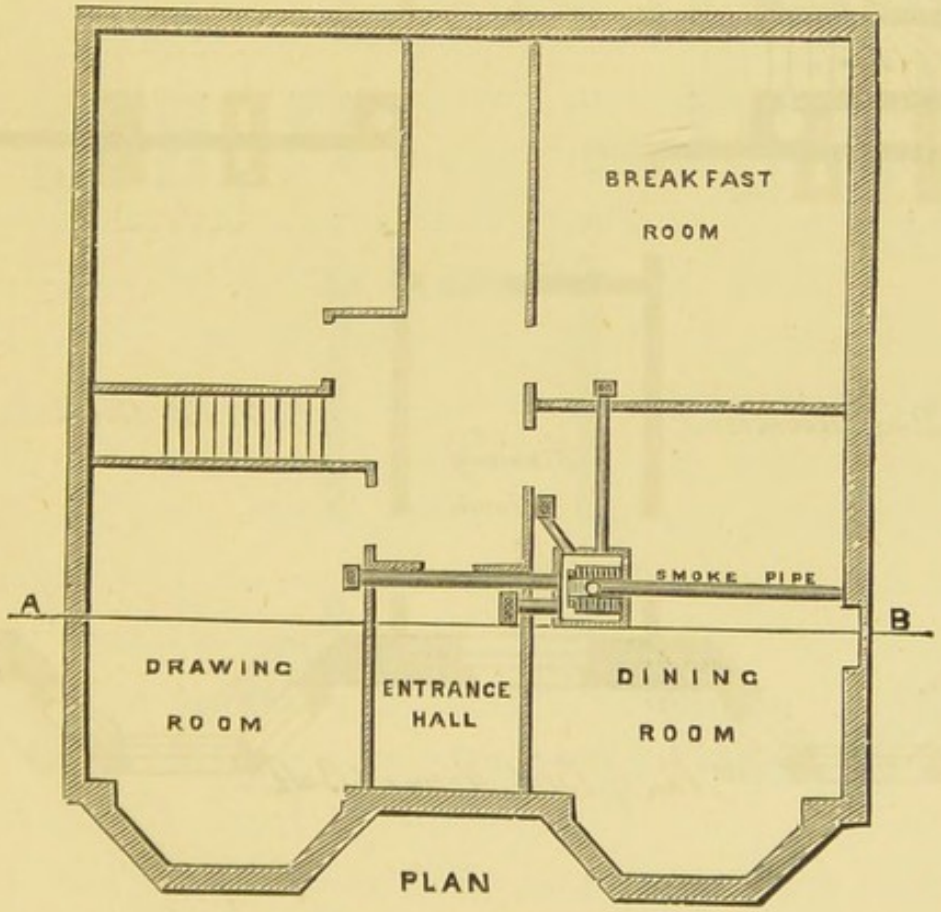
THE TEMPERATURE OF THE HOUSE.

Persons in weak health, who of necessity must have a fire in their bedrooms, often suffer from having to pass through cold passages or into cold rooms, and it is a great advantage to them to have the whole house thoroughly warmed. In large houses a proper system of warming the whole house from one centre is of great advantage. It not only gives greater comfort, but is more effective and more economical than the ordinary open fire-place in each room. In large entertaining rooms which occasionally may be filled with visitors,

special appliances for ventilation are essential, and should be provided for when the building is being erected. But there is no difficulty whatever in warming any house which is already built. The warm air system can be adapted to any place which is cellared. A Convoluted Stove may be fixed in the basement, the smoke-pipe taken to the nearest chimney, and a separate delivery of warm air to the dining-room, drawing-room, breakfast-room, and the hall; from the hall the warm air finds its way to the bedrooms, and raises their temperature eight or ten degrees. The plan and section of house show the arrangement. An apparatus with four deliveries fixed as shown will not consume more fuel than one open fire-place; the fire will remain good through the night, so that the rooms are never cold even in winter, and a house fresh from the builder's hands can be perfectly dried in a fortnight. This system of warming has the advantage of giving a constant supply of fresh air from the outside, which is warmed in the apparatus chamber on its way to the various rooms, and where no outlet has been provided, the ordinary chimney flues act as ventilating shafts. If a cavity is formed in the outside walls, the various rooms may be ventilated into it; the outlet from the cavity ought to be made at a high point, underneath the eaves. It is a very good rule to have the bedroom windows slightly open both day and night, and have them fitted with a high bead. Fresh air from the outside can then be admitted without draughts. (See "Plan and Section of House.")



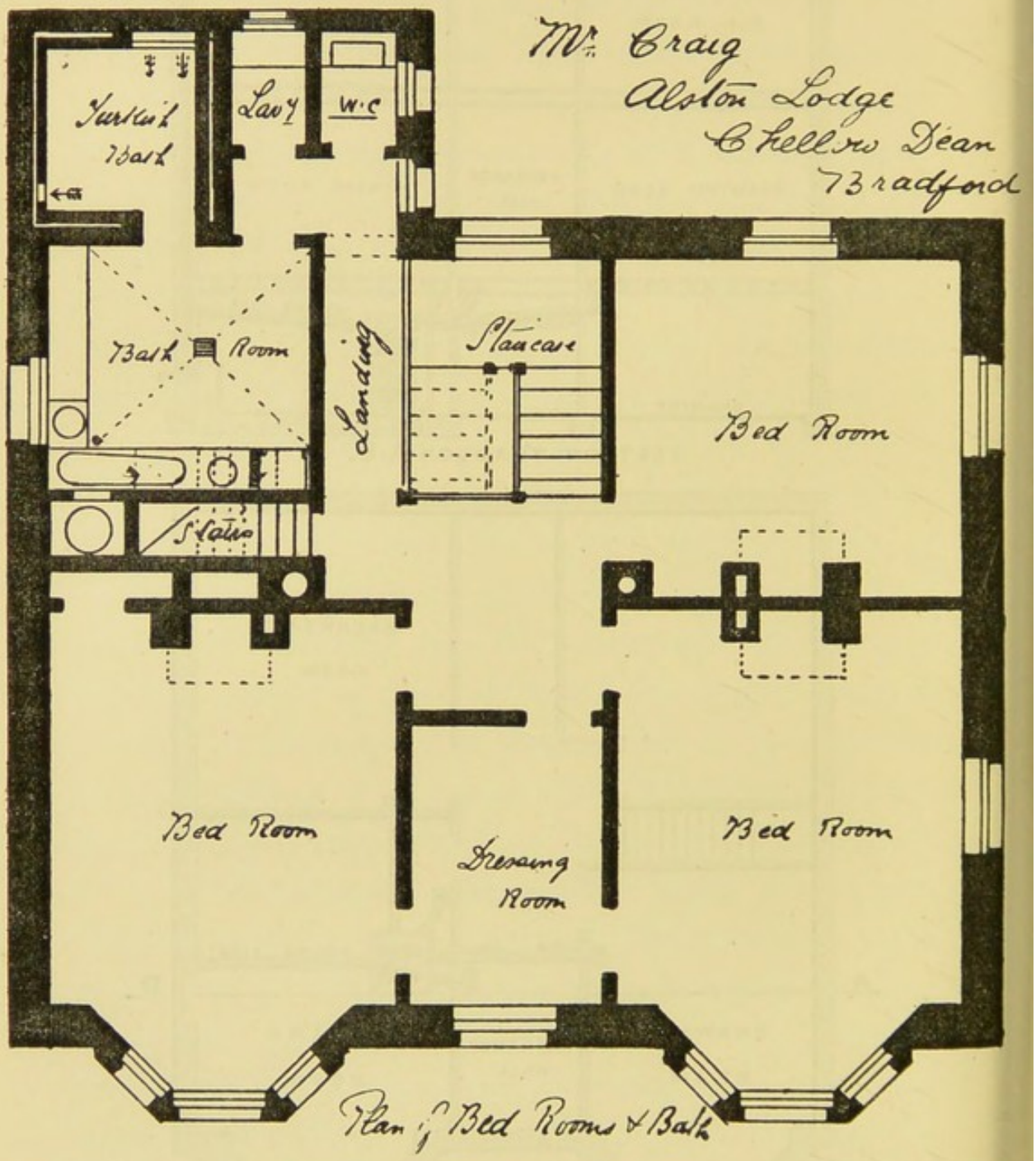
SECTION THROUGH A.B.



PLAN

PLAN AND SECTION OF HOUSE.

PRIVATE TURKISH BATHS.



The following is a letter sent to the *Building News* of August 3rd, 1888. The plan on page 70 also appeared at the same time :—

Convoluted Stove Works,
Stockton Street, Clarendon Street, Manchester.

Sir,—In the able articles which have appeared from time to time in the *Building News* on the Turkish bath the writer has confined himself chiefly to description of construction and ornamenting of large public baths. The Turkish bath has taken deep root in this country, and is a valuable institution. It is extensively used by all classes of the community—by peers and artisans—for sanitary as well as for remedial purposes. Every town of any pretension must now have its Turkish bath; many large towns have several, and the large, first-class hotels now find it necessary to have a Turkish bath annexed to their establishment, contributing so materially as it does to their success.* (See next page.)

Private Turkish baths are greatly on the increase. Formerly, on account of the great expense of construction, a luxury like the Turkish bath could only be indulged in by the wealthy; but now a neat and efficient bath can be put up at a very moderate cost, and there is no difficulty whatever in heating such a bath with the same heating apparatus which warms the house. The hot air can be readily directed to the bath or to the house, as it may be required.

When a new house is in course of erection the hot-room may be arranged so as to adjoin the ordinary

bath-room on the same floor as the bed-rooms. On reference to the above plan the economy of such an arrangement must at once be clear to everyone.

In warming a house already erected we frequently make a small hot-room in the basement alongside the brickwork inclosing the heating apparatus. This room is invaluable to a family, as the valves can be closed, and the heat can be shut off from the rooms above and turned into this room. The necessary high temperature also can be raised in a short time to produce a copious perspiration. By this means a severe cold or chill may be conveniently and readily thrown off, and perhaps a serious illness avoided.

We are, &c.,

J. CONSTANTINE AND SON.

*[We have heated the Turkish baths at the Hotel Windsor, Victoria Street, London; the Granville, Ramsgate; the Imperial Hydropathic Hotel, Blackpool; and our tender has been accepted by Alfred Waterhouse, Esq., R.A., London, to heat the Turkish bath in connection with the Hotel Metropole, Brighton. This bath is as large and well fitted-up as any bath in London.]

The following shows with what success a Turkish bath and house can be alternately heated by the same stove:—

Alston Lodge, Chellow Dean, Bradford, April 13th, 1889.

Messrs. J. Constantine & Son.

Gentlemen,—I am pleased to say that I have no difficulty in heating my private Turkish bath from the *same apparatus* (your Convoluted Stove) by which the house is warmed. The warm air can be easily directed to either the bath or the house, as it is required. The ventilation of my house is all that one could desire. The warming and ventilation in a house of this size promote health.

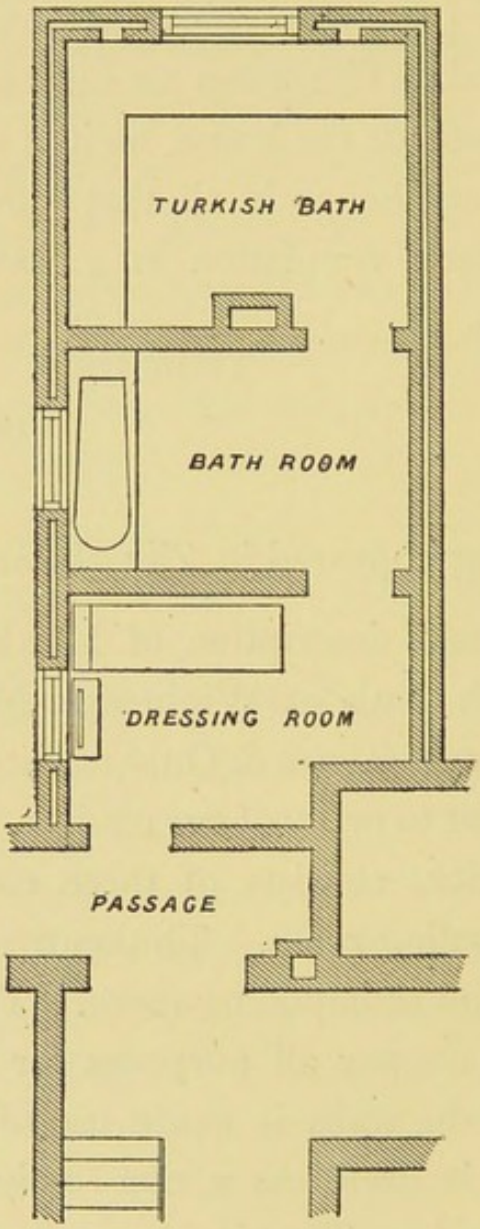
Yours truly,

THOMAS CRAIG.

The following appeared in *The Architect*:—

"The plan and description of Mr. S. T. Mander's private Turkish bath at Wightwick Manor, Wolverhampton, Messrs. Grayson & Ould, architects, Liverpool, will be of interest to many of our readers. The building, which is of brick, consists of three rooms—two hot-rooms and a cooling room. The centre one answers as 'tepidarium' and shampooing-room. Three rooms are sufficient, and answer all purposes for a private bath. The cavity in the walls is made use of for ventilating the bath, and is useful as a non-conductor from the colder air outside. The inside walls are of glazed bricks in various colours, designed in good taste. These walls form the best surface for hot-rooms; they are easily washed. The ceilings are concrete, and the floor neatly tiled. The bath is effectually heated by

Messrs. J. Constantine & Son's (Manchester) Convoluted Stove. The size of warm-air flue is 2 feet 9 inches. The air to be heated is drawn from outside through



flues of equal dimensions. With such provision for ventilation a rapid and constant change of air takes place, and all vitiated air and the effluvia thrown off by

the bather is speedily carried away, and one of the chief desiderata of bathers secured much to their satisfaction. The English people are supposed to be rather slow to change habits or adopt those of other nations; but we seem to have jumped at and taken to the Turkish bath in a remarkably short time. We have not only taken to the system, but have used it freely, and we may take credit for having materially improved it in construction, and also developed a system of heating and ventilating it, which, based on sound scientific principles, can be relied upon to act with certainty."

OBESITY: FATTY DEGENERATION.

SYMPTOMS of fatty and arterial degeneration are numerous and varied. Sometimes they show themselves in an indisposition to walk, which, if given way to, the mischief only increases; the breathing is not free and good as is ought to be; the hearing becomes dull, the ear being unnaturally dry; there is a tendency to ossification, and deposits of chalky matter in the fingers or toes. When fat is accumulated there is general degeneration through all parts of the body, and when in an advanced state it is dangerous to attempt to run. Frequently there are *sudden* deaths caused by hurrying to catch a train or a tram, and in such cases the verdict is usually apoplexy or failure of the heart's action, whereas it would have been more correct to make it died of fatty degeneration. The public would open their eyes if in one of these cases the jury were to add to their verdict "the poor fellow had never been taught how to live—whenever he was hungry he eat anything which was put before him, and never inquired whether it was right or wrong, hence his early and sudden death!"

If the fat man was not so supremely happy and well satisfied with his great bulk he would be an object of pity. It is amazing that so many Englishmen are really

proud of their bulk. A curious sight it is to see a man of over twenty stone weight naked in a Turkish bath amongst others. The first impression is that some unknown animal has strayed in. Superabundance of fat may be taken off at the rate of half a pound a day with safety, increasing at the same time the vital power. By suitable diet, along with the hydropathic treatment, fatty matter may be got rid of much more safely than by the *banting* system or the hot water and lean meat cure. The latter system might with propriety be termed the Starvation Cure; but care should be taken not to carry it on too long.

RHEUMATIC GOUT AND RHEUMATISM.

GOUT may be inherited, as also there may be hereditary predisposition to ordinary rheumatism; but in a large majority of cases both the one and the other are produced by improper diet or improper drinks. By diet, therefore, a cure may be effected. The diet, as indicated in Mr. Isaac Holden's letter on page 61, will usually clear the system of gout, and three weeks' trial of the regimen will convince anybody that it is an effective one. One thing especially should be avoided by gouty individuals, and that is fermented bread.

Beery rheumatism is very common, and that condition of body really means "beery degeneration." There is a large number of persons who make a point of taking a number of glasses of beer each day; they are not drunkards, they think the beer necessary to keep up their stamina; as a result, they fill up and get bulky, and if they are not bloated they approach very near to it. Such a habit makes old men of them about forty years of age.

It is well known that alcohol has the tendency to prevent the natural waste of the body, which to some extent accounts for the bulk and bloatedness of beer-drinkers. A few years ago "Punch" made fun of this—

"An old toper was going to the public-house, not for a 'booze,' but to prevent the *waste* of *tissue*."

Preventing the waste of tissue means causing disease, first of the fluids, then of the skin, in the form of eczema, which afterwards develops into rheumatism. A very large proportion of these classes of disease could be avoided, and there can be no doubt that they materially shorten life.

BREAD.

WHAT freak of folly and of unreason can have introduced the universal custom of eating white bread by the human family? In many households the wholesome, nourishing, flesh-forming whole-wheat bread or biscuit is never seen, and children are reared deficient in bone and stamina in consequence. Wheat is taken to the miller, and though the valuable life-sustaining properties are taken out of it, white flour is produced and sold for food at a *high* price. We are certainly not an economical but a very wasteful people. A great variety of white starchy biscuits also are made. If any of the great biscuit firms introduces a little of the genuine wheat meal they add fancy names, and then puff and advertise them in glowing terms, almost equal to announcements of quack medicines.

John Bull is very complaisant, happy, and easy-going, but he certainly requires to make a searching inquiry into the diet of his family, and to know the reason why his children die at such an early age.

Good substantial wheat-meal *biscuits* are easily made, and may be baked in any common oven. The best material ought to be used. To five pounds of meal add ten ounces of butter or dripping and four ounces of Miller's baking powder; mix in the ordinary

way with tepid water; do not roll out too thin, and you will get a palatable biscuit which children are fond of, that is if the oven is heated to the right temperature. This can be ascertained by a little practice.

A WHOLE-MEAL BREAD RECIPE.

Dr. Allinson gives the following instructions for making whole-meal *bread.* He says:—"Put in a bread mug about seven pounds of whole-meal flour. Make a hole in the centre of the flour, and into this pour a quart of warm water, in which half an ounce of German yeast has been dissolved. Gradually mix flour and yeast together until well mixed into a dough, and allow to ferment an hour before the fire. Then add a little more warm water and a little salt, one or two table-spoonfuls to taste. Knead well again, let alone for another hour in front of fire, then fill your bread tins from this, and bake about an hour. A little experience and a few trials will soon make perfect."

Now, none need be without whole-meal bread. They have all the necessary information, and it only wants applying.

BREAD, CONSTIPATION, AND STARVATION.

In an article on constipation, Dr. Allinson also states that "eating white bread causes it in a great many instances." He concludes by saying, "Could I only pass a law making the sale of white bread criminal, I should do more good for my fellow-men than all the laws that

have been passed during the last hundred years, but it would ruin pill and patent medicine makers." If, then, white bread was no longer eaten, in almost all cases the bowels would act naturally, and thus do away with the pernicious use of pills. And it is estimated that over five and a half million pills are swallowed daily, or one pill a week by every individual in the population. Worked out in another form, these pills, we are told, would weigh in a whole year 178 tons.

William Cobbet got very angry with the well-to-do classes for encouraging the cultivation of the potato as food for the people. He contended that they wanted to starve the working classes on a potato diet. He never dreamt that when better times and better wages came for the working people they would starve themselves on a poor innutritious diet of white bread and tea. It is scarcely possible to make a less life-sustaining meal, and yet there are tens of thousands sit down daily to such a meal. It is depressing to know that there are hundreds, nay, thousands of girls and young women with sallow, sickly countenances, caused by this kind of diet, whereas a few weeks' diet of whole-meal wheat biscuits, and fruit, a daily bath, and a brisk walk in the country would bring to their cheeks the rosy tint of health. Some of them pay the penalty acutely for errors in diet, in the form of tic-doloureux.

VEGETABLES.

WHILE John Bull is investigating the bread question, he will do well to inquire into the cooking of vegetables. Many of his cooks throw away the water in which the vegetables have been boiled; not only that, but they throw away a valuable portion of the vegetables which would make good food. This is a mistake, both as regards the vegetables and the water, which contains most of the alkalies. Celery tops and outsides make a capital vegetable dish, if properly boiled. Dr. Charles D. Hunter, F.C.S., &c., says:—

"When vegetables are soaked in cold water to keep them fresh, when they are blanched in hot water to please our eye, or when they are well boiled and their essence drained off that we may eat the depleted residue, those soluble salines are almost entirely extracted. And what are left? Chiefly the less soluble salts of lime and magnesia—just those elements so abundant in the cretaceous degeneration of blood-vessels. Potash is the alkaline of element formed tissue; its absence is one great cause of scurvy, as well as of the waxy and perhaps the cretaceous types of degeneration. A little examination of our modern commoner foods will show how deficient they are in this element."

"There are some foods especially abundant in potash salines, and for the benefit of those suffering from, or liable to suffer from their loss, it may be well to know these and how to use them. Easiest of use and ready to hand is bran tea. It is easy to purchase bran in any large city, and to make a strong infusion of it, at the rate of a good tablespoonful per head. This is especially rich in both potash and soluble phosphates, the two most important and easiest to be lost of the food salines.

GRAINS OF POTASH AND PHOSPHATES PER POUND.

	Potash.	Phosphoric Acid.
Bran	93·1	201·6
Beans	80·5	55·3
Flax Seed	72·8	91·0
Peas	68·6	61·6
Rye Flour	45·5	59·5
Cabbage Heads	42·0	14·0
Barley Flour	40·6	66·5
Potato	39·2	12·6
Beets	30·1	5·6
Oatmeal	29·4	38·5
Carrots	22·4	7·7
Turnips	21·0	7·7

"The above are all *rich* in potash, but other things (fruits, &c.), containing less, may yet supply more by the larger quantity one may eat, and by the absence of or by the mode of cooking avoiding any risk of loss. The fruits best to use for this purpose are, in order of richness, strawberries, greengages, plums, pears, and

oranges; and of vegetables, rhubarb, celery, lettuce, endive, watercress, and dandelion.

"Vegetables of all kinds should be cooked in soups only, for the water gets the *quality* of the vegetable, though the solid part may retain the quantity. Dyspeptics who say they cannot eat vegetables will find the strained soup of them quite light, easily made pleasant, and of more value to them by far than the boiled vegetable itself, and more valuable to those in advanced years than soups made from flesh meat."

In boiling vegetables, more water should not be used than is sufficient to boil them, then the whole can be mixed and eaten; or they may be boiled in a steamer, the inner vessel having a perforated bottom; the fluid is then separate from the substance, and can be used as soup. At the Vegetarian Restaurant, Fountain Street, Manchester, this soup is excellent. Many gentlemen go there for a plate of that soup, then go elsewhere to have a plate of meat.

WASTE, CHANGE, AND RENEWAL OF THE BODY.

THE change which is and must always be going on from birth to death is very great. The whole substance of the body is completely renewed in seven years. Liebig said that with active hydropathic treatment it could be renewed in one year. If that is so, and the various functions of the body can be improved at the same time, and the vital force maintained, the hydropathic system of treatment is certainly an important addition to the healing art. And this rapid renewal by no means seems impossible when the various processes of bodily change is remembered. The process of purification of the blood in the lungs, and the quantity of air taken for that purpose is really wonderful. The lungs contain 600,000,000 air cells. The skin has 7,000,000 pores, nearly twenty-eight miles of perspiratory tubing, through which is thrown off in twenty-four hours by ordinary perspiration about two pounds of salt, acid, and oily fluid; while from two to four pounds of visible perspiration per hour are passed off by a person working very hard in a hot place. Moreover, out of every ninety-six ounces of food consumed, more than thirty-four ounces pass off through the pores of the skin.

To preserve health while this great change is going

on the Almighty in his wisdom saw it necessary to form the body mostly of water. Four-fifths of it is water, the blood, the brains, the nerves are nearly all water; muscle is three-fourths water, and it even enters largely into the composition of the bones. It will thus be seen that there are great facilities for throwing off morbid or superabundance of matter, and restoring health with proper diet and regimen, *i.e.*, when the vital organs have not been been seriously injured.

There are many small men, who are not big eaters, fed up at about forty years of age by improper diet. Living mostly on starchy bread and milk, pudding, porridge of oatmeal, they make up and get puffy, and are not able to walk a couple of miles without being *blown.* In this condition, the arterial degeneration is assuming a dangerous state. There are others who are lean whose bodies dry up from the same error of diet, and have limy and chalky deposits in the joints.

As man advances in years the waste does not go on so freely, and sweating baths ought to be taken to assist it. As a rule, the vapour or Russian bath suits old people better than the dry air of the Turkish bath; the steam softens the skin and makes it healthy in appearance and agreeable to the touch.

HYDROPATHY.

HAS the water cure, since its introduction into this country in 1842, gone on developing into a more scientific and reliable system of the healing art? As such, does it stand higher to-day than it did twenty years ago? It must be admitted that it does not. One reason for this is, perhaps the chief reason, medical men, who had never studied the principles of hydropathy at all, have taken charge of large establishments; they seem to have thought that it was sufficient that they held a medical diploma. Some have taken appointments at those establishments with a view to live a retired life, having had enough of hard medical practice, and they have let the place in their charge run down. The hydropathic treatment of patients, to be effective, needs to be watched with care just as much as any other system of treatment. Some of those establishments which have been run down are now ordinary hotels, having a licence for the sale of intoxicating drinks. Of course a bath can be had at those places, but that cannot be said to be hydropathic treatment.

At some establishments mustard and Chili paste are used to all classes of cases—a new version of the brandy-and-salt craze. It is used freely in the baths and plastered on the compresses. Thus the skin is

raised and running sores are produced, and with innumerable tepid and warm baths, the strength of the patients is run down in some cases to a point of danger. If the now discarded system of blistering and bleeding, which weakened the patient, was wrong, this cannot be right. It is not in accord with, but entirely opposite to, the principles acted on by Preissnitz and expounded by Dr. Gully.

This will not be the hydropathy of the future. It drains, taxes, and reduces the vital force, irritates and disturbs the nervous system, and interferes with sleep, which is one of Nature's chief restoratives. Those who for the past thirty years have had the opportunity of observing the after-effects, know that it does not conduce to longevity; the hydropathic formula requires to be thoroughly overhauled and recast, the nearest approach to what it ought to be is the sun cure as practised in Germany and America. In this treatment they use all the best part of Preissnitz's system; the wet-sheet packing, which was his sheet-anchor, is in constant use, also tonic baths of all kinds, with walking exercise after each bath. Patients return from this treatment with renewed vigour, and with a new lease of life, as was the case with patients under the treatment of Dr. Gully Wilson and Dr. Edward Johnson.

The sun cure, as now practised, is not available at all times of the year, nor in all parts of the globe, since the sun often sulks and will not shine, especially in England. There would be no difficulty in applying

a substitute for this part of the treatment in the form of the Turkish and Russian baths.

Thomas Carlyle, who was a month at a Water Curing Establishment under Dr. Gully, writing to his friend, R. W. Emerson, August 25th, 1851, makes the following prophecy:—"I foresee this water-cure, under better forms, will become the *ramadham* (holiday) of the overworked unbelieving English in time coming; an an institution they were dreadfully in want of this long while."

Yes, hydropathy will have to be remodelled. A formula is wanted which will do something more than quicken the waste-dispose of the old material of the body. The functions of the various organs must be restored to a healthy condition before the blood can be purified, and health and vigour restored. Physical exercise and development ought to form an important part of the treatment. At every large establishment there ought to be a drill sergeant, or a professor of gymnastics, to put the patients through the most suitable physical exercise and movements to suit each particular case; with those who are capable, walking exercise should not be neglected. There ought to be a full complement of baths constructed on the most modern and best principles, including the sun bath, with fully qualified shampooers and rubbers. A constant and watchful supervision of diet is as important as any other part of treatment. The diet which is best for youths is entirely wrong for those in advanced years. At the present time very little, if any,

regard is paid to those matters, and patients waste their time in consequence. When visiting those establishments it is not infrequent for one to sit at table next to a confirmed dyspeptic eating the very food that will of itself cause the disease he is suffering from. When the necessary changes and reforms have been made, and competent and energetic medical men are appointed, the hydropathic establishments are bound to be far more successful in the future than they have been in the past.

WALKING EXERCISE.

A VERY large number of business men suffer in health for want of more active exercise in the open air; railroads from all large cities and towns are so numerous and the fares so low to the suburbs, and 'buses and trams to the outskirts so convenient, many people have almost given up walking and their health, consequently, has deteriorated. With some, three or four miles a day of walking exercise is thought to be quite sufficient; but it is not, far from it; the muscles require to be brought into play; respiration, the circulation of the blood, and the action of the skin must be quickened. Such exercise, to a business man, is identical with the muscular work of the labouring man, who, by the sweat of his brow, earns and sweetens his daily bread, and ensures sound sleep. Recently a paragraph has gone the round of the papers stating that the reason the Australian athletes are superior to the English is because in training Australians take more walking exercise.

If a man at seventy years of age cannot walk seven miles in two hours without any difficulty, he is below par. The mistake that many people make when they have walked about three miles is that they feel disposed to stop, whilst, if they walked on and aroused the

circulation, they would then enjoy it and walk with ease. If the labouring man feels a little tired or idle when he has worked a couple of hours, he cannot give up; he works on, gets the muscles into play, and then enjoys his labour for the day. So it is with walking; it is childlike to hark back and give up just when you are beginning to really benefit by it.

ALCOHOL AND MORTALITY.

19, Chapel Walks, Manchester,
March 3rd, 1890.

DEAR Mr. Constantine,—You did me the honour to ask as to my experience of the effects of alcohol on the rate of mortality. I have been now for much more than a quarter of a century connected with the practice of life insurance in the various capacities of agent and broker for the best English life offices, and for the last three years as manager for this district of the Mutual Life of New York, the wealthiest office in the world, and the oldest in the United States.

A very few facts, without entering into too great details, may be sufficient to convince those who are not prejudiced by the warping effects of selfish interest, or who are not yet blinded by uncontrolled appetites, that human lives are as certainly shortened by the common use of intoxicating drinks as they are by such plagues as smallpox or leprosy.

In the first place, no office has for the last forty years, at any rate, refused an abstainer because he was an abstainer from intoxicants. Rather more than fifty years ago, it is true, Mr. Warner was refused by one of the offices on that ground, with the result that he established the United Kingdom Temperance and

General Life Institution, which undertook to insure abstainers in a separate class, and so secure them all the advantages arising from their wise self-denial. Mr. Warner is still, after fifty years have run their course, living to refute the ignorance of that time, and is the chairman of the office he founded.

But about the same time, the "Licensed Victuallers and Monarch" (afterwards incorporated with the Liverpool and London and Globe) was established, with the purpose of insuring publicans and others on *reasonable terms*, thus showing that even then these lives were looked upon as being risky on account of their occupation. The extra charged by this favouring company was five years; of course, no one in this business being accepted unless he could be warranted strictly temperate.

Whilst it is pretty generally understood that any office would now prefer a life abstainer to one who takes his glass regularly, it is also well known that many offices altogether decline to insure the life of any one who is personally engaged in the manufacture or retail sale of intoxicating liquors; it is also the case that those offices which do accept these risks charge about a pound per cent extra, which, if the average age at entry be taken as thirty, would be equivalent to a loading of more than ten years, *i.e.*, that the man of thirty is charged as if he were aged forty.

On the other hand, there are some offices which charge a lower rate for those who never touch alcoholic drink, and experience has justified their practice.

Nearly twenty years ago a local committee asked me and my younger brother, then a medical student, but now a physician, to ascertain for the Convocation of York what effect the use of strong drink had upon human life; and for this purpose, we went carefully through the tables of mortality for the Stockport district, taking two consecutive years, deeming one year insufficient to form a fair basis of enquiry, when, after eliminating as not necessarily affected by trade occupation all deaths at ages under twenty-one, we found that a landed proprietor, a lawyer, or a clergyman attained an average age of about seventy, and an agricultural labourer of about fifty-three, but a beerseller only lived to be thirty-seven.

Consider what this means! Suppose at a brewster sessions, two young agricultural labourers, each aged twenty-one, approach the bench, cap in hand, in their Sunday clothes, and with their best company manners on, to crave the monopoly of a licence to sell beer; and further, for you must draw somewhat upon your imagination, suppose that the magistrates have no private ends to serve, and that they are actuated solely by the desire to give the licence to the more suitable man of the two. Well, John Smith has broader shoulders, clearer complexion and brighter eyes, he holds his head up better, and is altogether smarter in his movements than Bill Sykes, who has comparatively an ill, slouching look about him, as if he had not taken the same care that his companion has done of his health.

The fact is, in such a case as the one I have

described, and it may be assumed that in the long run it will be so in all cases that are decided on their pure merits, the man who, humanly speaking, is the likelier for life will be entrusted with the liberty to carry on this dangerous trade, which requires that men should be naturally self-controlled and of good constitution.

Yet the mortality tables prove that, even after this selection, this dangerous gift has changed the relations previously existing between these two men. The weaklier agricultural labourer leaves the court with an unimpaired expectation of life of thirty-two years; the new-fledged beerseller, flushed with the favour that he feels has been bestowed on him by his betters, little dreams that they have unintentionally cut his life shorter by sixteen years, or only to half that of his disappointed friend.

The Mutual Life of New York, which last year insured over thirty-one million pounds on the lives of new members, will on no account issue a policy on the life of any person who is actually engaged in the sale of intoxicants to be consumed on the premises. It may be of interest to give the exact words :—" The company will not insure the following classes : Gamblers, barkeepers, hotel proprietors who attend their own bars, saloon keepers where liquor is sold, keepers of billiard saloons, or any individual who may be engaged in retailing alcoholic drinks, or engaged personally in the manufacture of the same."

The United Kingdom Temperance and General

Provident Institution has kept the two classes of abstainers and non-abstainers separate, and this shows what at first sight may appear to be an inconsistency, viz., that in the first period of its history, the difference between the two sections was much smaller than it is at present, being only about sixteen per cent better in the temperance section, whereas now it may be taken as nearer thirty-two. In my opinion, this may be accounted for owing to the fact that those who sought admission to the abstaining section at a time when abstinence had only just come into vogue, would probably not have been abstainers for more than a year or two, and therefore the poison had hardly got out of their system; on the other hand, those entering now have, in not a few cases, been abstainers all their lives, and some will have inherited sounder constitutions from parents and even grandparents, who had not lowered their health by indulgence in a pleasant but baneful drink.

Now, for the sake of arriving at a practical conclusion as to the cost in loss of life yearly, let it be assumed that instead of a difference of over thirty per cent between the two sections, that the difference is only twenty-five per cent: and further, that the general population of the United Kingdom are as temperate as the carefully selected lives in the general section of a temperance office, and these provide wide margins for errors, and what do we find? The average death-rate of the British Isles may be taken as 700,000 yearly, but 25 per cent of this amount might be saved if they

were abstainers, or in other words, by an absurdly low estimate, the annual mortality as arising from this preventible cause may be taken at 175,000. That it is really much more than this it would, I think, not be very difficult to prove, but this will perhaps suffice for the present.

In the year 1876 I called the attention of the Salford magistrates to the fact that the liquor dealers of that borough were not conforming to the law, which required signs not only to state who the licensed person was, but also in particular whether he was licensed to sell all intoxicating liquors or only some of them; and having been asked by the Chief Constable to draft the form according to my reading of the Acts under which such matters were regulated, gave him the form which is now generally adopted in all the largest cities and towns of England at least. The first, as far as I know, to put up the now common words, "Licensed to sell intoxicating liquors to be consumed on the premises," was the proprietor of the Black Bull, Blackfriars Street, Salford. The point of this is, that Parliament itself calls alcoholic drink "intoxicating;" this word coming from the Greek, *to toxicon*, means poisoning. Therefore I charge Governments, Liberal and Conservative, with guilty knowledge in sacrificing these thousands of lives for paltry Revenue.

I am, dear Sir,

Yours truly,

EDWARD NEILD.

LONGEVITY.

THE most remarkable case on record of longevity of a person whose health had once been shattered is that of Louis Cornaro, who, "till the fortieth year of his age, had led a life of dissipation . . . and was so far reduced that his physician assured him he could not live two months, that all medicines would be useless, and that the only thing which could be recommended for him was a *spare diet.* Having followed this advice, he found, after some days, he was much better; and at the end of a few years his health was not only perfectly re-established, but he became sounder than ever he had been before. . . . For *sixty whole years* he took no more than *twelve ounces* of food, everything included, and *thirteen ounces of drink* daily. . . . When he was eighty years of age, his friends prevailed upon him to make a little addition to his food . . . he gave way to their request, and raised his food to fourteen and his drink to sixteen ounces. 'Scarcely,' says he, 'had I continued this mode of living ten days, when I began, instead of being cheerful and lively as before, to become uneasy and dejected, a burden to myself and to others. . . . But by the blessing of God, and my *former regimen*, I recovered; and now, in my

eighty-third year, I enjoy a happy state of body and mind. I can climb steep hills . . . and I am a stranger to those peevish and morose humours which fall so often to the lot of old age.' In this happy disposition, he attained his hundredth year."—*Hufeland.*

In this instance, it shows how a life, once enfeebled may be stretched out by living strictly according to rules and by maintaining the equilibrium of supply of nourishment and waste.

De Lacy Evans, in his work "How to Prolong Life," has collected from various sources a large number of cases of longevity; only a few of those are inserted here. There is nothing extraordinary in a person living to about one hundred years, but Louis Cornaro is an exception, he having wrecked his health when young.

The majority of those who have lived to a very long age have had no scientific principles to guide them. They have had strong constitutions to commence with and have adopted simple and regular habits; their diet, by chance, has been suitable for healthy life. Thomas Parr's case is a sample of many others.

Thomas Parr, a native of Shropshire, died in 1635, aged one hundred and fifty-two. He married at the age of eighty-eight, "seeming no older than many at forty." He was brought to London by Thomas, then Earl of Arundel, to see Charles I., says Easton "when he fed high, drank plentifully of wines, by which his body was *over-charged*, his lungs obstructed, and the habit of the whole body quite disordered; in con-

sequence, there could not but be speedy dissolution. If he had not changed his diet, he might have lived many years longer."

On being dissected, at his death, Dr. Harvey found "the heart was thick, fibrous, and fat; *his cartilages were not ossified, as is the case in all old people.*"

Henry Jenkins, of Ellerton, in Yorkshire, died in 1670, aged one hundred and sixty-nine. He remembered the battle of Flodden Field, in 1513, at which time he was twelve years of age. The registers of the Chancery and other courts prove that he gave evidence, and had an oath administered to him one hundred and forty years before his death.

In the "Philosophical Transactions" of 1696, Sir Tancred Robinson states: "This Henry Jenkins, in the last century of his life, was a fisherman." When ninety years of age, a child was born to him, and when one hundred and sixty, he walked to London to have an audience with Charles II., and was able to swim across rapid rivers after he was one hundred. "His diet was coarse and *sour*."

Thomas Carn, according to the parish register of the Church of St. Leonard, Shoreditch, died January 28th, 1588, aged two hundred and seven years. He is stated "to have been born in the reign of Richard II., A.D. 1381, and lived in the reigns of twelve kings and queens of England."

Bridget Devine, of Alean Street, Manchester, died in 1845, aged one hundred and forty-seven. Her husband was a hand-loom weaver, and died about

twenty years before her. They were *very poor*, and after her husband's decease she was *supported* chiefly from the *parochial funds.*

Mrs. Thomson, lived near Dublin, died in 1796, aged one hundred and thirty-five. "She was very active; and by a *regular mode of living*, together with much exercise, *attained* so great age."

Lord Bacon says the Countess of Desmond, who lived to one hundred and forty-eight, *renewed her teeth* once or twice.

John Rousey, Esq., of the island of Distey, in Scotland, died in 1738, aged one hundred and thirty-seven. "He had a *son* at *one hundred* years of age, who inherited his estate."

Owen Duffy, of Monaghan County, Ireland. The *Dublin Freeman* of July 29th, 1854, stated that this individual was then alive, aged one hundred and twenty-two years. Having lost his second wife when he was one hundred and sixteen, he married a third, a young woman, by whom he had a *son* and a *daughter.* At this time his youngest son was two years old, whilst his eldest was ninety.

Mrs. Jane Lewson, widow, of No. 12, Coldbath Square, London, died in 1816, aged one hundred and sixteen. She was left in affluent circumstances. Her apartments were never washed, the windows never cleaned, and she never practised ablutions of any kind whatever, for fear of taking cold. She "cut *two new teeth* at the age of eighty-seven."

John Riva, of Venice, died at one hundred and

sixteen. "He always chewed citron-bark, and had a child after he was one hundred."

Francis Confit, of Burythorpe, near Malton, Yorkshire, died in 1767, aged one hundred and fifty. "He was *very temperate in his living*, and used great exercise, which, together with occasionally eating a raw egg, enabled him to attain such extraordinary age."

Mr. Dobson, of Hatfield, farmer, died in 1766, aged one hundred and thirty-nine. "By much exercise and *temperate living*, he preserved the inestimable blessing of health."

Mr. Evans, of Spital Street, Spitalfields, died in 1730, aged one hundred and thirty-nine, in complete possession of all his faculties. He well remembered the execution of Charles I., being seven years old at the time.

Mrs. Clum, lived near Lichfield, Staffordshire, died in 1773, aged one hundred and thirty-eight. "By frequent exercise and *temperate living* she attained so great longevity. . . . She resided in the same house one hundred and three years."

Catherine Noon, *alias* Noony, lived near the city of Tuam, in Ireland, died the same year, aged one hundred and thirty-six. "Was *very temperate at her meals.* Her husband died aged one hundred and twenty-eight."

Mrs. Keithe, of Newnham, Gloucestershire, died in 1772, aged one hundred and thirty-three. "She *lived moderately*, and retained her senses till within fourteen days of her death."

George Kirton, Esq., of Oxnop Hall, Yorkshire, died in 1764, aged one hundred and twenty-five. He was a great fox-hunter, and "no man, till within ten years of his death, made more free with the bottle."

William Thompson, of North Keyme, Lincolnshire, lived to one hundred and eight. "He smoked two pipes, and drank some ale, on the day of his death."

Jonathan Hartop, of the village of Aldborough, near Boroughbridge, Yorkshire, died in 1790, aged one hundred and thirty-eight. "*He ate but little*, and his only beverage was milk."

Ephraim Pratt was living at Shaftesbury, U.S., in 1803, aged one hundred and sixteen. The Rev. T. Dwight states that this man was born at Sudbury, Mass., in 1687, and that throughout his life he had been *very temperate*, both in *diet* and habits. His general drink was *cider;* he was accustomed to take animal food, but in *less quantity* than most persons around him. Milk was also a common article of his diet.

The Hon. Mrs. Watkins, of Glamorganshire, died in 1790, aged one hundred and ten. "She was remarkable for regularity and *moderation.* For the last thirty years she subsisted entirely on potatoes."

On March 18th of this year, a telegram from San Francisco went round the English papers stating that "Gabriel, the old Indian whose death at the age of one hundred and fifty years was announced a day or two ago, was undoubtedly as old as he made himself out to be. He never used intoxicating liquor or tobacco in any form."

Another current instance of great vigour and vitality in old age was given in a provincial paper, on March 24th. "A cablegram from Ritchie (West Virginia) states that Jacob Reffneer, a prosperous farmer in that neighbourhood, who is ninety years of age, walked on Tuesday last a distance of twenty miles to the home of a widow named Mrs. Ray. He introduced himself to her, proposed marriage, and within half an hour was accepted. He then walked with her to this town, a distance of six miles, and the couple were married."

The oldest man in the world is a citizen of Bogota, in the Republic of San Salvador. This new Methuselah declares that he is 180 years old, and it would seem he flatters himself, for his neighbours give the assurance that he is older than he says he is. He is a half-breed, named Michael Solis, whose existence was revealed to Dr. Louis Hernandez by one of the oldest planters in the locality, who as a child knew Solis as a centenarian. They have found in the year 1712 his signature among those of persons who contributed to the building of a Franciscan convent which exists near San Sebastian. His skin is like parchment, his long hair, of the whiteness of snow, envelopes his head like a turban, and his look is so keen that it made a disagreeable impression on the doctor. Interrogated by the doctor, he answered complaisantly that his great age was due to his regular mode of living, and to his never giving up to any excess of any sort whatever. "I never eat but once a day," said he, "but I never use any but the strongest and most nourishing foods. My meals last a half hour, for

I believe it is impossible to eat more in that time than the body can digest in twenty-four hours. I fast the 1st and 15th of each month, and on those days I drink as much water as I can bear. I always let my food become cold before I touch it. It is to these things that I attribute my great age."—*Quebec Union Liberale.*

THE SKIN.

[The following are some verses which have again and again been reprinted by editors of weekly journals during the last twenty-five years, and containing, as they do, some wholesome truths in simple form, they are perhaps worth reproduction here.—J.C.]

THERE'S a skin without, and a skin within,
A covering skin and a lining skin;
But the skin within is the skin without,
Doubled inwards and carried completely throughout.

The palate, the nostrils, the windpipe, and throat,
Are all of them lined with this inner coat,
Which through every part is made to extend,
Lungs, liver, and bowels, from end to end.

The outside skin is a marvellous plan
For exuding the dregs of the flesh of man,
While the inner extracts from the food and the air
What is needed the waste of the flesh to repair.

Brandy or rum, whisky or gin,
Is sure to disorder the skin within;
While if dirty and dry, the skin without
Refuses to let the perspiration out.

Good people all, have a care of your skin,
Both of that without and that within.
To the first give plenty of water and soap,
To the last little else than water, I hope.

But always be very particular where
You get your water, your food, and your air,
For if these be tainted or rendered impure,
It will have its effect on the blood, be sure.

The food which will ever be for you the best,
Must be pure and plain, and good to digest;
All unripe fruit and decaying flesh
Beware of, and fish that is not very fresh.

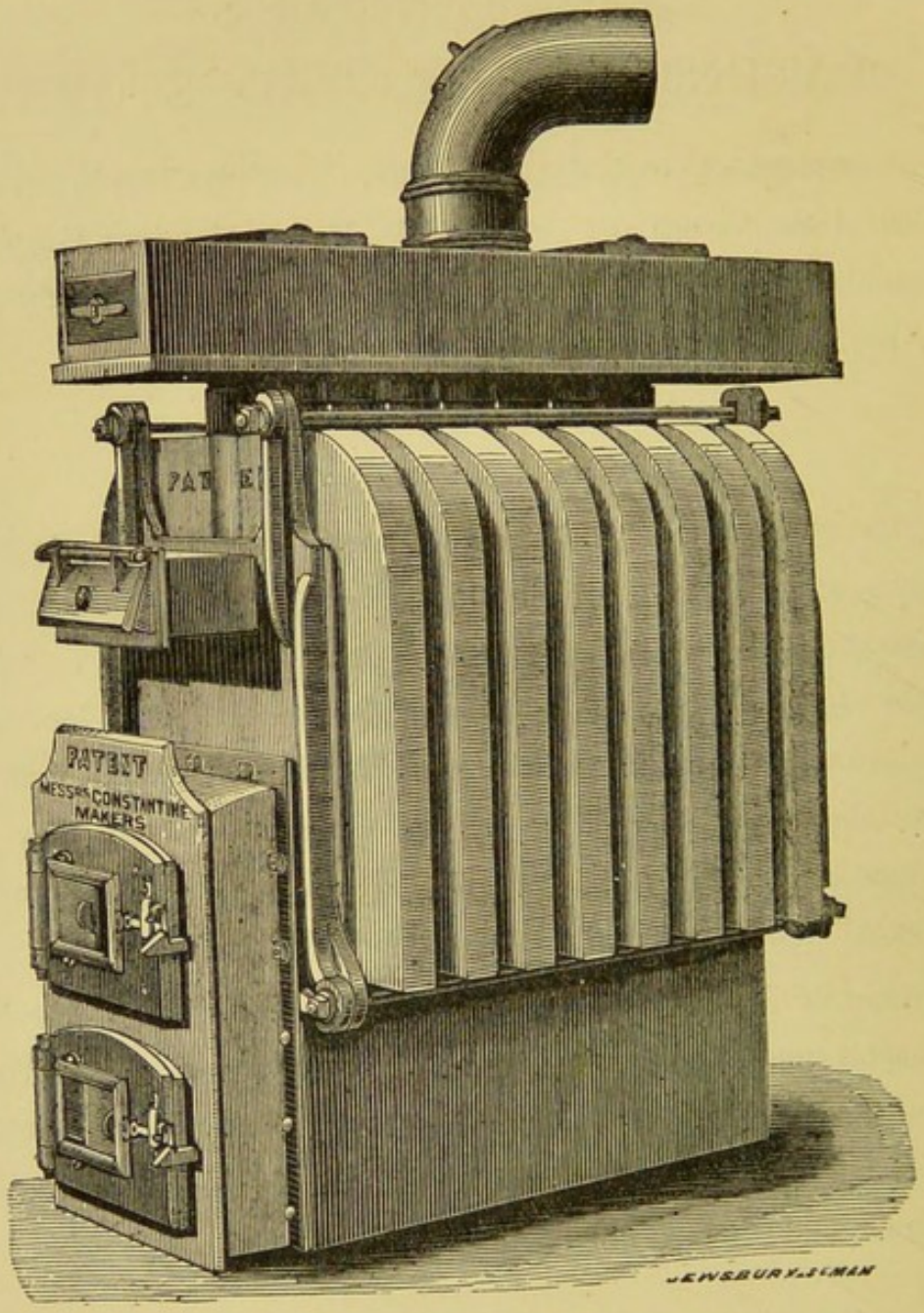
Your water, transparent and pure as you think it,
Had better be filtered and boiled ere your drink it,
Unless you know surely that nothing unsound,
Can have got to it over or under the ground.

But of all things the most I would have you beware
Of breathing the poison of once-breathed air;
In bed, whether out or at home you may be,
Always open the window and let it go free.

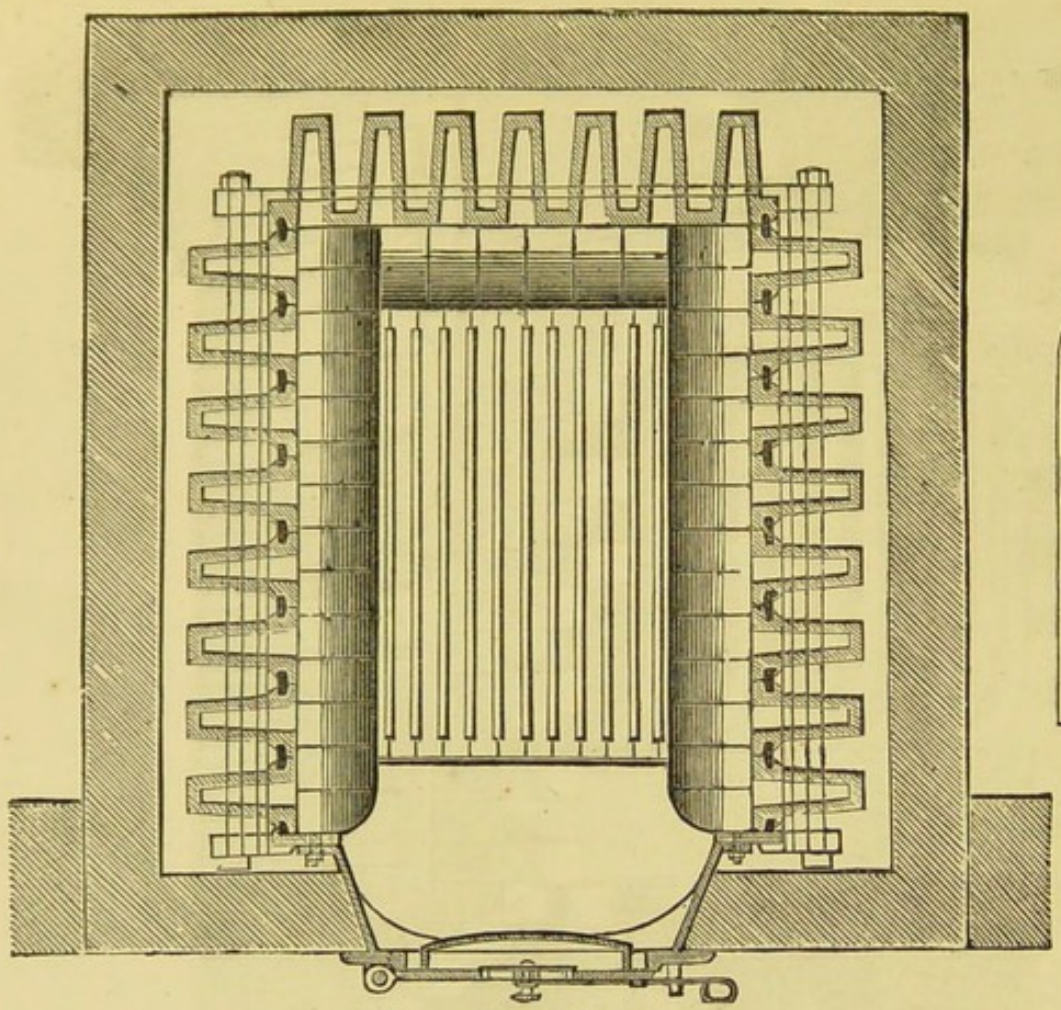
With clothing and exercise keep yourself warm,
And change your clothes quickly if caught in a storm,
For a cold caught by chilling the outside skin
Flies at once to the delicate lining within.

All you who thus kindly take care of your skin,
And attend to its wants without and within,
Need not of cholera feel any fears,
And your skin may last you a hundred years.

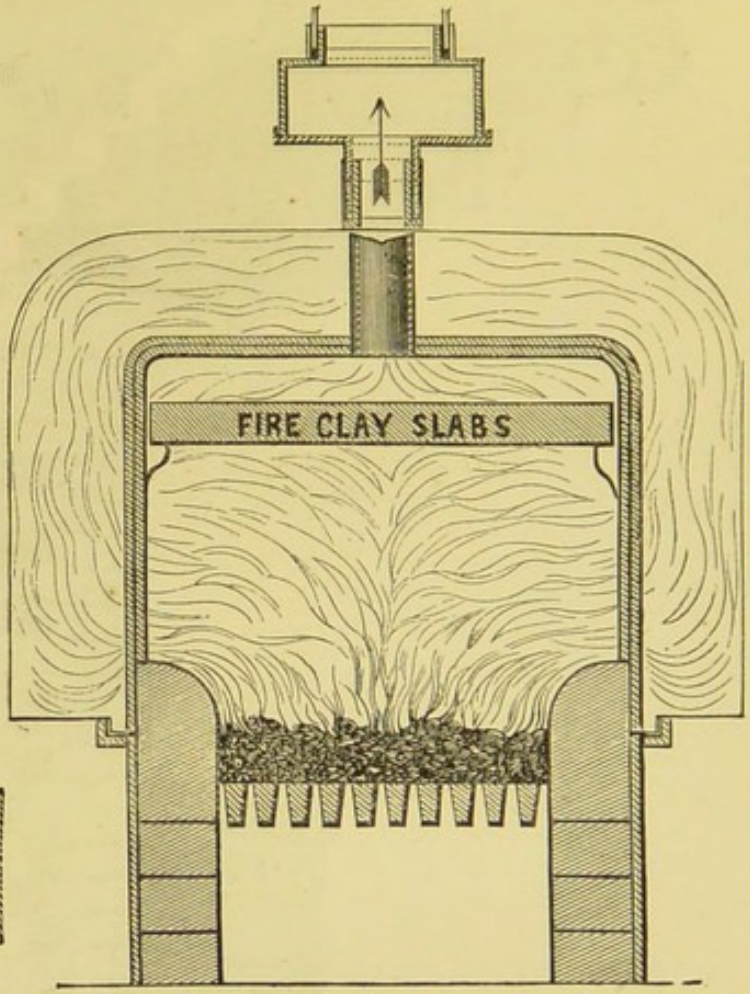
INDEX.



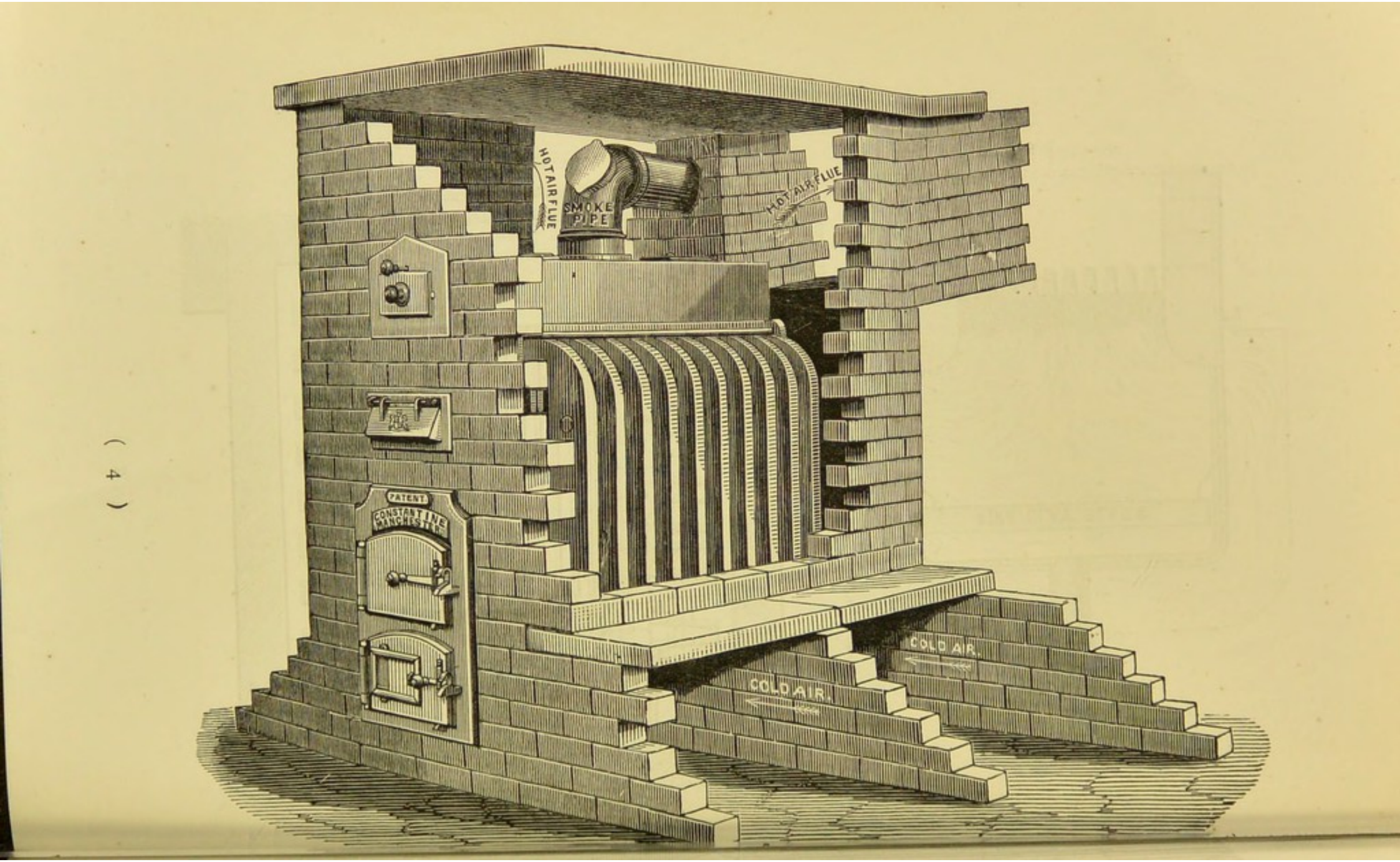
CONSTANTINE'S PATENT CONVOLUTED STOVE.



HORIZONTAL SECTION.



CROSS SECTION.


HOT AIR FLUE
SMOKE PIPE
HOT AIR FLUE
PATENT
COLD AIR
COLD AIR

DESCRIPTION OF THE CONVOLUTED STOVE.

The engraving opposite shows a "Ten Convolution" Stove fixed in brickwork (one side of brickwork is omitted to show flues, &c.). A stove may be made of any number of convolutions from six to twelve, and eight different sized convolutions are made, varying in weight from half a hundred-weight to three hundred-weight and a half each. The ash-box forms the base, upon which are mounted the convolutions, from the inside of which all the products of combustion are delivered into the horizontal smoke box at the top, from whence they are conveyed to the chimney direct by the pipe, as shown.

In the front are four doors: The first one, at the end of the smoke box, can be removed for the purpose of cleaning the box and the necks of the convolutions with the convolute brush (supplied with each stove); the second door, immediately over the fire-clay slabs, allows the upper part of the convolutions to be cleaned with the brush; the third is the fire-door; and the fourth the ash-box door, by which the draught can be regulated, though this purpose is more fully answered by the damper in the smoke box.

On reference to the horizontal and cross section [page (3)], it will be seen that the convolutions are slightly arched or dome-shaped, each being *deeply grooved* to form a chamber, with an aperture at the top of each arch leading to the smoke box. These grooves extend also down the sides. Each convolution is a separate casting, and *is in itself a moderate-sized stove;* the inner and outer surface being equal. The internal flues of the convolutions act as so many conductors of heat and flame; and the external flues, as so many warm air channels, compelling rapid circulation and diffusion, and affording in a small compass a remarkable extent of heating surface. The convolutions are held together by bolts and are connected by a peculiar hermetical joint (which forms part of the patent) made sound and rendered thoroughly smoke-tight by iron borings or other substances.

In the cross section, between the fire and the top of the stove, will be seen slabs of fire-clay, resting loosely on brackets. These slabs equalise the heat in all parts of the stove, and prevent the direct escape of the flame and hot gases into the smoke box and the chimney, by projecting them into the convolutions, thus concentrating the heating power on the parts where it is of most service.

At each side of the grate, and at the back, the stove is lined with fire brick, protecting the metal from immediate contact with the fire, though not preventing the flame and hot gases from entering the convolutions.

ADVANTAGES OF THE PATENT CONVOLUTED STOVE.

The Convoluted Stove possesses MORE THAN DOUBLE the heating and radiating surface of any stove that will stand in the same space. To each square foot of grate space there is nearly one hundred feet of radiating surface. The direct action of the flame and hot gases is upon those parts where the most powerful heating effects can be produced. With reasonable care it can neither crack nor burn out; and super-heating is next to impossible. The heat generated is utilised to the fullest extent—not wasted in the centre part of the fire, nor allowed to pass up the chimney before it has done any work, but is compelled (by means of the fire-clay slabs) to traverse a large extent of metallic surface in the lateral and convoluted flues and in the smoke box at the top, as will be seen on reference to the sections. This arrangement minimises not only the consumption of fuel, but all danger from fire, thus AVOIDING ANY INCREASE OF PREMIUM FOR INSURANCE. Notwithstanding the small consumption of fuel, a large volume of pure warm air is constantly passed through the external flues of the apparatus, ensuring thorough ventilation. In places where there is much dust, the air may be filtered on its way to the apparatus, by passing it through cloths or a layer of fine cotton wool, or it may be washed by passing it through a fine spray of water.

THE ROYAL EXCHANGE, MANCHESTER.

The warming of the immense area of the new Royal Exchange, Manchester, was a problem which caused considerable anxiety to all concerned, and in fact by many was pronounced impracticable; but two large Convoluted Stoves fixed in the basement answer the purpose

most effectually, and with less labour and consumption of fuel than are required for many *small churches* under the old system.

CONSUMPTION OF FUEL.

The immense economy of fuel by the use of the Convoluted Stove may be illustrated by the amount required in the heating of the two largest buildings to which the apparatus has been applied.

The coke consumed, with the cost, year by year, is as follows :

	Tons.	£	s.	d.
1874–5	28	10	10	0
1875–6	21½	8	1	3
1876–7	22¾	8	10	7½
1877–8	19¾	7	8	1½
1878–9	31¼	11	14	4½
1879–80	21	7	17	6
1880–1	20	7	10	0
Total for seven years ...	164¼	Costing £61	11	10½

Or an average cost of £8. 16s. per annum for fuel.

The consumption of coke at the Free Trade Hall (before named) for the four winters commencing 1872, has been 17 tons 16 cwt. 2 qrs., being an average of 4 tons 9 cwt. 14 lbs., costing about £2. 10s. for the whole winter.

A FEW TESTIMONIALS AS TO THE EFFICIENCY OF J. CONSTANTINE AND SON'S CONVOLUTED STOVE.

From the BISHOP OF LIVERPOOL.

The Palace, Liverpool, July 22nd, 1880.

Dear Sir,—The Patent Convoluted Stove which you put down for me in Stradbroke Church last winter proved entirely satisfactory, and I can recommend it strongly to the attention of every one who wishes to warm a large building with hot air. You are at liberty to make any use of this letter.—Yours faithfully,

J. C. LIVERPOOL.

Mr. Constantine,
Convoluted Stove Works, Manchester.

From ISAAC HOLDEN, Esq., M.P.

Oakworth, Keighley, Dec. 4th, 1889.

Gentlemen,—Having had many years' experience of your Convoluted Stove in several Chapels and Schools, and in warming four detached houses, and also in heating my private Turkish Bath at Oakworth, I can bear testimony to its value and can strongly recommend it as an efficient Air Warmer. Your system of drawing fresh air to the apparatus from the outside, thus ensuring good ventilation, ought to be universally adopted, not only in Turkish Baths, but also in Private Houses, Churches, Chapels, and Public Halls.—With kind regards,

Messrs. J. Constantine & Son, Manchester.

ISAAC HOLDEN.

Tower Hamlets Mission, 31, Mile End Road,
London, E., 21st February, 1888.

Messrs. J. Constantine & Son.

Gentlemen,—I have great pleasure in testifying to the efficiency of the heating apparatus you fixed over two years ago in our Great Assembly Hall (THE LARGEST MISSION HALL IN THE WORLD, accommodating nearly 5,000 persons). Two stoves were fixed, ONE is ample for heating our immense building. The cost for fuel during the winter season, from October to March (*in use every day*), has been about £1. 1s. per week, or 3s. per day. One great advantage of your system, which I did not expect, is the IMPROVED VENTILATION in summer, when the stoves are not in use—fresh air is supplied through the warm air grids. Our hall is now acknowledged to be the BEST VENTILATED ROOM IN LONDON. The stoves have given us every satisfaction, and I strongly recommend them.—I am, yours faithfully,

FREDK. N. CHARRINGTON.

85, New Street, Altrincham, Nov. 10th, 1888.

Gentlemen,—The heating apparatus fixed by you—two at the British School in 1868 and 1870, at the New Town Night School, 1871, and at my residence two years ago, say four in all—have

answered our requirements very satisfactorily. The stoves are in constant use in the winter time, and the necessary repairs have been slight and unimportant.—Yours faithfully,

Messrs. J. Constantine & Son. H. BARRATT, A.M. Inst. C.E.

Millbrook, Hadfield, July 3rd, 1889.

Messrs. J. Constantine and Son.

Gentlemen,—The Patent Convoluted Stove which you put in at Christ Church, Tintwistle, *upwards of thirteen years ago*, continues to give great satisfaction.—I am, yours faithfully,

JAMES SIDEBOTTOM, Churchwarden.

The Hydropathic Establishment and Winter Residence,
Llandudno, October 14th, 1889.

Dear Sir,—It is now over seventeen years since your Stoves have been in use here. Our Turkish baths are more than double the area they were in 1872. At that time we used flues for heating them and spent over three pounds per week in fuel, and found it hard work to keep the heat up to 150° in the hot rooms. Now we spend six shillings per week for fuel, and the hot rooms, without difficulty, are over 200° Fahrenheit. We have now a constant flow of pure warm air passing through the rooms; the ventilation cannot be excelled.—Yours truly,

H. THOMAS, M.D.

CAVENDISH STREET CHAPEL, MANCHESTER.

March 16th, 1886.

To Mr. J. Constantine.

Dear Sir,—I gladly give my testimony in favour of your method of warming public buildings. From the erection of this chapel, in 1848, until the adoption of your Convoluted Stove in 1877, various and costly efforts had been unsuccessfully made to free it from draughts and attain a comfortable temperature.

The style of the building is Early English, affording accommodation for 1,500 adults in pews, and 600 children. The length is 125 feet and the width 62 feet, with transepts. The height internally is 60 feet to ridge of roof, which is open. Owing to cubical content, cruciform shape, large windows, apse, etc., it presented a serious problem

to the committee responsible for heating it. In simple justice, therefore, I am bound to acknowledge the successful adoption of your Stove. We have found it INEXPENSIVE TO ERECT, ECONOMICAL IN USE, EASY OF MANAGEMENT, ENTIRELY SAFE, AND ALWAYS RELIABLE. With *one Stove and three hours' firing* we get a volume of pure warm air, undisturbed by draughts, and ample to maintain an agreeable temperature.—Yours sincerely,

W. J. WOODS, B.A., F.R.G.S., Minister.

HOLY TRINITY CHURCH, STRETFORD ROAD, MANCHESTER.

Nov. 4th, 1885.

Messrs. J. Constantine and Sons.

Dear Sir,—We have pleasure in stating that the Patent Convoluted Stove, which you erected in this church some *fourteen years ago*, is still in use, and has answered our purpose well during the whole time.—We remain, dear sirs, yours respectfully,

C. W. ASHWORTH,
S. COBB, } Churchwardens.

ZION CHAPEL, RIPON.

October 29th, 1885.

Messrs. J. Constantine and Sons, Manchester.

Gentlemen,—We are glad to learn from your man, sent over at our request to inspect the heating apparatus, that the Convoluted Stove is in as good condition as the day you put it in for us, now some *nine years ago*. We are pleased to say that the heating of the chapel by your system has been VERY SUCCESSFUL, and IN EVERY WAY SATISFACTORY, the members of the congregation remarking how much more comfortable the place is now than when it was warmed by the hot-water pipes. The cost, also, for fuel is considerably less, and the heat more evenly distributed throughout the building.—Yours truly, for the Trustees of Zion Chapel,

W. H. KEARSLEY, Secretary.

The last three places of worship were all fitted with hot-water apparatus, which, though in good working condition, had to be taken out because of the cold draughts from the roof. The Convoluted Stove ENTIRELY REMEDIED THIS.

Upton House, Ardwick,

December 20th, 1889.

Dear Sirs,—I have much pleasure in stating that the Heating Apparatus recently fixed by you in St. Thomas' Church has been found thoroughly efficient for its purpose.—Faithfully yours,

JOSEPH NUNN, Rector.

Messrs. J. Constantine and Son.

An Ex-MAYOR OF MANCHESTER.

March 22nd, 1888.

Mr. Constantine.

Dear Sir,—For the *last nine years* I have had the experience of the Convoluted Stove you fitted up for me at Summerfield, Bowdon, and I am pleased to say it has answered its purpose admirably. No difficulty has occurred in working, and it is used whenever the climate requires to be supplemented by additional warmth.—Yours truly,

ABEL HEYWOOD.

---

15 and 17, Manchester Road, Burnley,

November 13th, 1888.

Messrs. J. Constantine and Son.

Gentlemen,—It is now *about eighteen years* since your Convoluted Stove was fixed in the above premises. I have much pleasure in informing you that it is working perfectly to-day, warming the shop and showroom thoroughly, at a cost of about threepence a day.—Very faithfully yours,

P. L. NICOLL.

From J. W. MACLURE, M.P.

Whalley Range, near Manchester,

8th September, 1886.

Gentlemen,—I have much pleasure in stating that your Convoluted Stove, which we have had for *over six years*, thoroughly warms the house, and keeps it a most agreeable temperature during the winter.—I am, yours truly,

JOHN W. MACLURE.

Messrs. J. Constantine and Son.

The MAYOR of MANCHESTER.

Manchester, April 8th, 1875.

Dear Sir,—I have pleasure in stating that the Apparatus for warming the building, placed by you in the Meeting House of the Society of Friends, in Mount Street, is working to the satisfaction of the Committee.—Yours very respectfully,

Mr. J. Constantine. JOHN KING, Junr.

[December, 1889.—This apparatus is still in good working order.—

——— J. C. & Son.]

67, Yarburgh Street, Alexandra Park, Manchester.

Messrs. Joseph Constantine & Son. December 11th, 1889.

Dear Sirs,—In reply to your inquiry respecting the Patent Convoluted Stove that you fixed in connection with the Whalley Range Wesleyan Chapel, Manchester, I have great pleasure in saying that for the last seven years it has answered entirely the aims of the trustees in adopting it. Prior to its being adopted, the chapel was *insufficiently heated by the hot water system*, and in cold weather there were continual down draughts which caused much discomfort to the congregation. Since your stove has been in use, we find the air heated to a pleasant and agreeable temperature, and the cold down draughts have disappeared.—Yours very faithfully,

MARTIN RHODES, Treasurer to the Trustees.

Haworth, May 25th, 1886.

Gentlemen,—I have pleasure in testifying to the thorough efficiency of your Convoluted Stove in every place where we have fixed it. At the Wesleyan Chapel and Schools, and the Minister's House, Haworth; Wesleyan Chapel, Bridgehouse, and the Minister's House at Oxenhope, it has been most satisfactory.

This is a cold, bleak region, as everyone knows who has read Mrs. Gaskell's 'Life of Charlotte Bronte,' and hitherto it has been a difficult matter to make the chapel, &c., comfortable in winter.

The Convoluted Stove, however, has been a success where it has been adopted in this neighbourhood, and the name has already become almost a "household word." A. R. REDMAN.

Messrs. J. Constantine & Son, Manchester.

Thing-hill, Hereford, September 7th, 1888.

Dear Sirs,—I have the pleasure of stating that the Convoluted Stove which you erected for me about eight years ago has been quite satisfactory. It warms the house both agreeably and economically.—Yours very truly,

Messrs. Joseph Constantine & Son, Manchester.

HENRY HIGGINS.

———

Woodlands, Dunham Park, Bowdon,
October 23rd, 1888.

Mr. J. Constantine.

Dear Sir,—I have great pleasure in testifying to the efficiency of your Heating Apparatus, fixed at my house 14 years ago. During the severe winters the rooms are kept at a uniform and agreeable temperature, and at a moderate cost of fuel. From my experience, a house warmed in this manner is much healthier to live in than if the warming depended entirely upon the open fire-grates.—I am, Sir, yours respectfully,

JOHN MCKENNA.

———

5, Norfolk Street, Manchester, November 26th, 1887.

Dear Sirs,—I have pleasure in stating that we have had your Convoluted Stove in action each winter during the past four years, and it gives us every satisfaction.—Yours truly,

THOS. NEWBIGGING, Civil Engineer.

Messrs. J. Constantine & Son.

———

Westwood, Blackburn, Nov. 12th, 1887.

Mr. Constantine.

The Convoluted Stove which I procured from you nearly two years ago thoroughly warms my house, and I consider it a great success.—I am, yours truly,

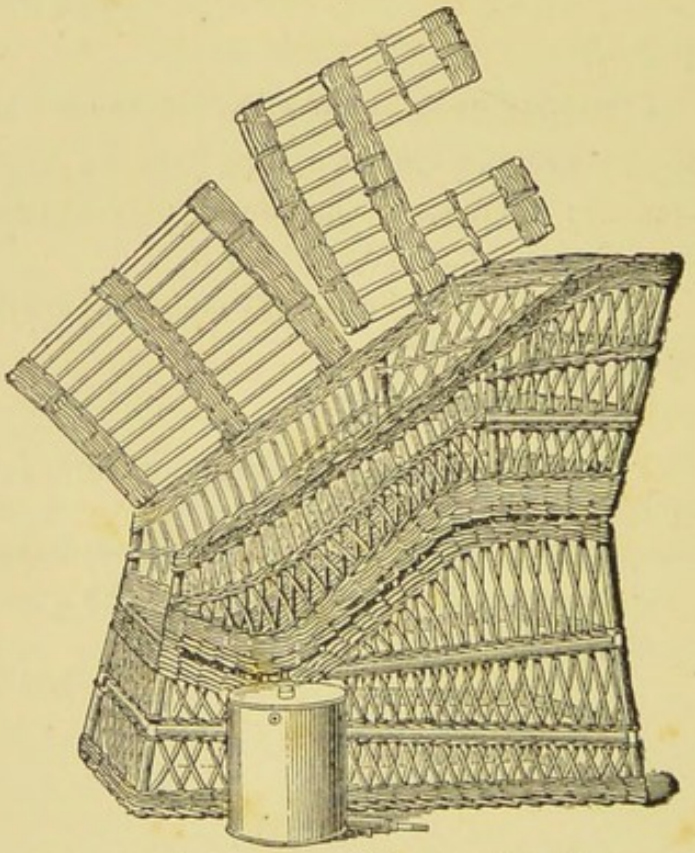
M. WHITELEY.

BATHS AND APPLIANCES FOR DOMESTIC USE.

Constantine's Portable Wicker or Cane Bath for Hot Air, Steam, or Sulphur.

NOTES ON NOVELTIES.

The accompanying engraving represents a new hot-air portable vapour bath, patented by Messrs. Constantine & Son, Oxford Street, Manchester. The firm is well known in connection with the convoluted stove, and the construction, heating, and ventilating of Turkish baths. Mr. Constantine, senior, we believe, is the oldest bath proprietor in this country, and the author of "Hydropathy at Home," which has reach a third edition. We learn from this work that he has taken a lively interest in the water cure since its introduction into England in 1842 by the late Captain Claridge, and that in 1848 he began to devote his time exclusively to that profession.



Price, £2. 2s.; Bunsen's Lamp and Evaporating Can, 10s.; Bunsen's Lamp, with Steam Boiler, 17s.

It is many years since we first met Mr. Constantine, and only the other day he seemed as sprightly and as full of life as ever; he must have learned the secret of preserving youth to a later date than most men. No doubt his knowledge of the proper use of baths, his abstemious habits, and the long walks in which he indulges, have had something to do with his continuous good health. Since this bath is very light and portable, and can be used in a bedroom or in an ordinary bath-room, it ought to be in great demand. Everybody knows the importance of having a ready means at hand of producing free perspiration in case of a severe cold or chill, by which serious illness may often be prevented. Many of the vapour or hot-air boxes which are sold for domestic use have some serious defect in them, defects which would have been avoided if made by a person fully acquainted with the every-day administration of those baths. If the space in which the bather is enclosed is too limited, the heat will play too directly on some particular part of the body, and the bath becomes very uncomfortable if not unbearable. In Messrs. Constantine's new bath there is no defect of this kind; there is an ample chamber and space for the heat. The bath is light in construction, and consequently very portable, and its moderate cost should bring it within the reach of every family.—*The Architect*, June 21st, 1889.

English Mechanic, June 28th, 1889, says: "The advantages of this bath are:—

1. It may be used in any bedroom, or in an ordinary bathroom, and may then be removed to a spare room, it being of light weight.

2. The patient, while undergoing the sweating process, is in an easy reclining position. Sitting erect in a box for twenty or thirty minutes wearies a patient.

3. The feet are elevated sufficiently from the floor to allow the heat to get well to them. If the circulation is promoted in the feet, and they are made to perspire equally with other parts of the body, a rush of blood to the head is prevented, and this is important.

4. The heat being delivered well about the feet, it ascends and plays equally on all parts of the body.

As this bath will not only be effective for producing perspiration, but cheaper than any others now in the market for this purpose, it ought to be in great demand."

Instructions how to use the bath forwarded to purchasers.

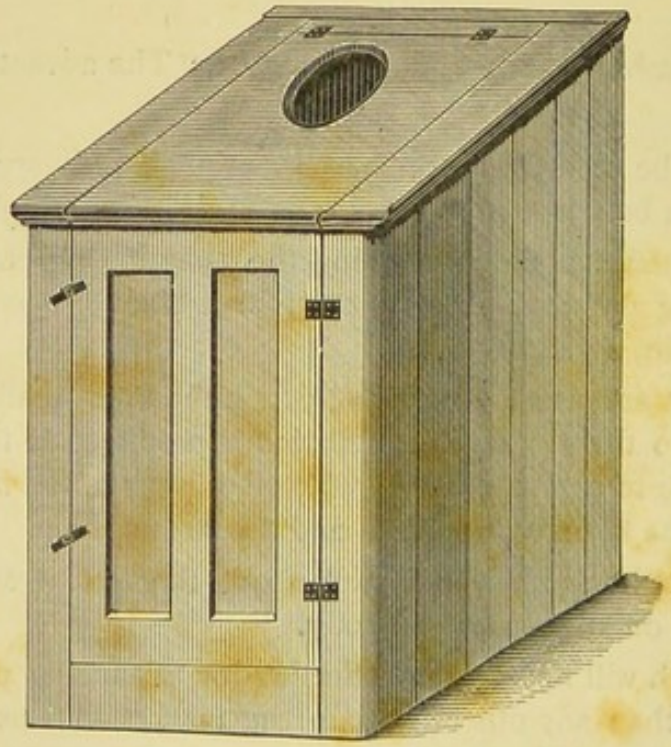
The Vapour Bath.

"The vapour bath is calculated to be extensively useful both as a preservative of health and as a remedial agent. Many a cold and many a rheumatic attack, arising from checked perspiration or long exposure to the weather, might be nipped in the bud by its timely use."—*Andrew Combe, M.D.*

The vapour is a safe and important bath. It has been used in various forms in all ages—in savage as well as civilised life—both for maintaining health, and for the cure of disease.

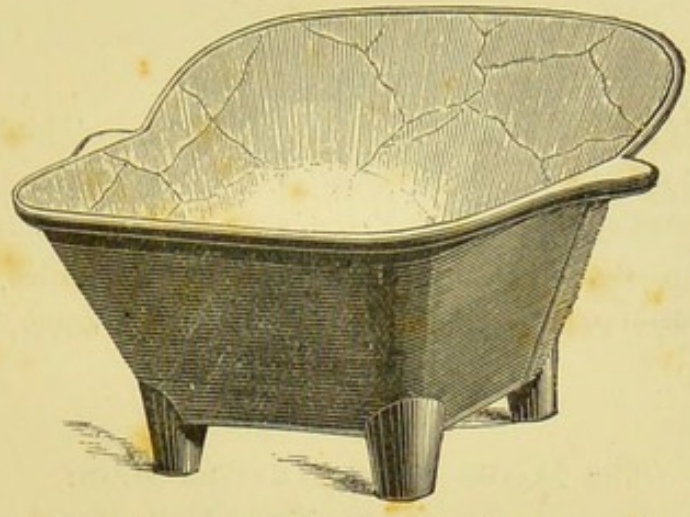
The effect of the vapour bath for cleansing and healing is remarkable; the warmth stimulates the circulation and expands and opens the pores, the perspiration then exudes, and the skin is relieved of a load of impurities. After being in the vapour ten or twelve minutes, if anyone will rub and use a little massage manipulation on any part of the body, they will be astonished by the quantity of effete matter thrown off. The vapour bath does not abstract, but imparts heat to the body. As we advance in years, the natural waste does not go on with the same freedom as in youth, hence the benefit of an occasional healthy stimulant to assist nature.

Vapour or Hot Air Bath.



Price £4; Bunsen Lamp, with Evaporating Can, 7s. 6d.; Spirit Lamp, with Evaporating Can, 8s.

SITZ BATH.



Japanned Tin, £1. 1s.; Tin Footbottles, 3s. 6d.; Fomenting Cans, 12in. by 9in., 3s.; Stomach Compress, 3s. The above may be had at Constantine's Baths, 23, Oxford Street, Manchester.

THE SITZ BATH

Is somewhat similar to an ordinary hip bath, but not so large, and, though deeper than the hip bath, it does not require more than half the quantity of water to immerse a greater portion of the body. As it is not widened and dished out like the hip bath, it is very handy, and is especially useful in a family. It can be used in the bedroom for the morning ablution. In hydropathic establishments it is extensively used, both as a derivative and a tonic. Anyone frequently using the short tonic sitz bath are not likely ever to be troubled with piles.

Messrs. J. CONSTANTINE & SON

Have been consulted as to the best arrangement of a large number of Public and Private Turkish Baths. When the various Hot Rooms, Shampooing Room, and the Cooling Room are duly proportioned to the number of bathers to be accommodated, there is no waste in the expense of structure, and when the Ventilation is arranged on a proper principle, a rapid change of air is secured, and the bath is kept pure and wholesome. It is not pleasant to have a hitch, a breakdown, when the bath is started, as was formerly frequently the case. The invention of the Convoluted Stove has effected a great saving of fuel. This has brought it into extensive use in heating Turkish Baths, as well as large public buildings.

HYDROPATHY AT HOME.—Third Edition, Revised and Enlarged, price 2s. 6d. A Familiar Exposition of the Principles and Domestic Practice of the Water Cure, with full instruction for the Treatment of Diseases, Casualties, &c. By J. Constantine. People's Edition, abridged, paper cover, 6d.

The MAYOR OF MANCHESTER writes:

Town Hall, Manchester,
Nov. 8th, 1888.

My dear Mr. Constantine,

I have perused with very great interest the book which you were good enough to send me upon the practice of the water cure at home. I am quite sure it will be found very useful to a great many suffering and infirm people. It reveals very great knowledge of the subject, and compiled with your long experience must be an invaluable guide to those who are studying the subject.—Yours very truly,

Sir J. J. HARWOOD, Knt.,
Mayor of Manchester.

"Every person who wishes to keep in health, or to be restored to health, should read this useful little treatise."—*Manchester Courier.*

"As to the book itself, it is simply invaluable to the heads of households, and as a book of reference it seems to us indispensable." *Reformer (Glasgow).*

HEALTHY LIVING.—By J. Constantine, with Six Portraits, 3d. The Baths, 23, Oxford Street, Manchester, and of all Booksellers.

EXAMINER PRINTING WORKS, MANCHESTER.