Medicinal and economic properties of vegetable charcoal : with practical remarks on its use in chronic affections of the stomach and bowels / by James Bird.

THE

MEDICINAL AND ECONOMIC PROPERTIES

OF

VEGETABLE CHARCOAL;

WITH

PRACTICAL REMARKS

ON

ITS USE IN CHRONIC AFFECTIONS OF THE STOMACH AND BOWELS.

BY

JAMES BIRD, M.R.C.S.,

LATE SURGEON ROYAL GLAMORGAN MILITIA,

ETC. ETC.

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JOHN CHURCHILL, NEW BURLINGTON STREET.

MDCCCLV.

DEDICATION.

TO

SIR BENJAMIN FONSECA OUTRAM, M.D.,

C.B., F.R.S., F.G.S.

INSPECTOR OF H. M. FLEETS AND HOSPITALS, &c.

DEAR SIR BENJAMIN,

As my oldest medical friend, and my earliest medical preceptor, it is with the greatest pleasure I avail myself of your kind permission to dedicate this short treatise to you. Early impressions are said to become more vivid and to shine with a clearer light, as the lamp of life is declining, doubtless ordained so by a kind Providence, to obscure the memory of recent sorrows, by throwing a brighter halo over the reminiscences of days long since ended.

The kind encouragement I experienced from you in my youth, as your pupil, has generously been continued to me with wise and friendly counsel, till time has dimmed my eye, and my hand has well nigh lost its cunning.

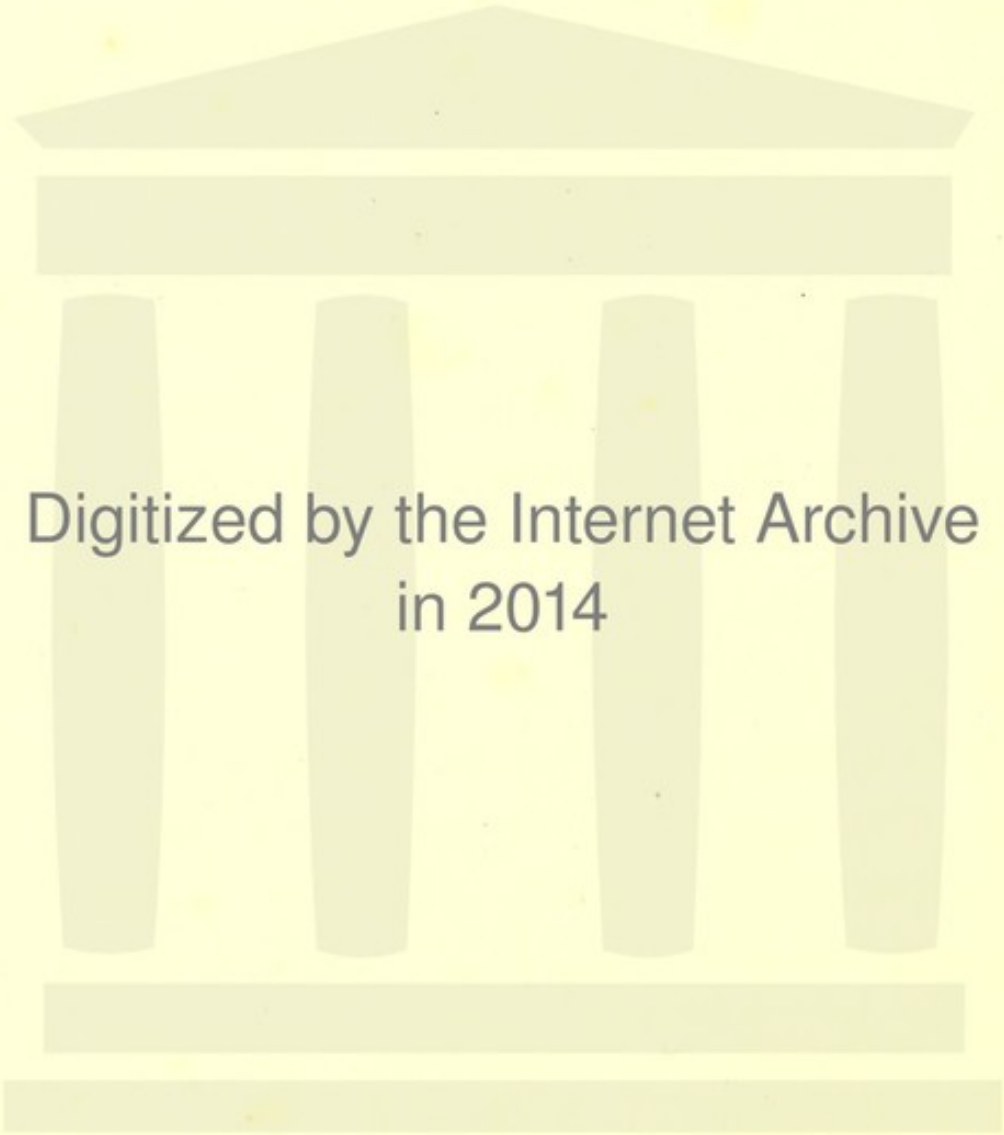
That you may be spared to enjoy for many years the respect and regard of the long list of friends whom your skilful ministrations and kind feelings, have for a long series of years been accumulating around you, is the sincere wish of,

DEAR SIR BENJAMIN,

Your affectionate and grateful Servant,

JAMES BIRD.

8, SEYMOUR STREET WEST,
CONNAUGHT SQUARE.
September, 1855.



PREFACE.

In submitting this treatise on the medical and economic properties of Charcoal, I wish, at the onset, to state distinctly, that I consider it to be in some respects yet upon its trial. Differences of opinion exist as to its disinfecting properties, though all parties are agreed that it is a powerful deodorant. No one doubts the fact that it possesses the power of absorbing gases to an extent greater than most other substances, while the extraordinary affinity it evinces for oxygen gas, and the property it possesses of distributing it over the whole of its atomic surface, are fully recognised by all chemists. Of its value as a medicine and its applicability as a remedy for many painful and troublesome maladies, I think the evidence afforded in the following pages, will suffice to convince those who have hitherto been sceptical of its curative

power, or who have not been aware that it possessed any medicinal virtue. I am, therefore, of opinion, that it is desirable to give vegetable Charcoal a more extensive trial in other disorders, as well as in those for which it has hitherto been used, as much of the discrepancy of experimenters with Charcoal hitherto, either as a remedy, topical application, as an antidote, or even when used for economic purposes, is undoubtedly due to their use of impure specimens of this substance. Bearing this fact constantly in mind, this remedy requires to be fairly treated, both as respects its purity and its application. Charcoal is not a "remedy for all;" nor does its claim to reputation rest upon its assumption of the well-known properties either of calomel, opium, or prussic acid. It will neither set a fracture, reduce a dislocation, nor supply integuments to a wooden leg; nor would any one think of administering it when the tongue is dry and shining, or where every symptom indicates a lack of moisture in the *primæ viæ;* but, nevertheless, Charcoal is confidently recommended as a valuable medicine, and it is known to possess besides, properties very applicable to a great variety of useful purposes.

INDEX.

ON THE MEDICINAL PROPERTIES OF CHARCOAL.

The use of Charcoal as a remedial agent has long been familiar to the medical profession, though it has not been very extensively administered internally in this country. It has, nevertheless, been occasionally employed, and with some few exceptions, it has proved very advantageous in many serious and distressing maladies. It has obtained a high celebrity as an external application to sloughing and gangrenous sores; correcting the fœtor of ulcers, and promoting the growth of healthy granulations, while its utility as a deodorising and disinfecting agent, is vastly superior to that of any other substance with which we are acquainted.

The properties of Charcoal are to some extent peculiar; it possesses an extraordinary capacity for absorbing gases, altering their character, and diminishing their bulk.

From the vast quantity of condensed oxygen contained within its pores, probably amounting to ten volumes, it rapidly oxydises and decomposes most

animal and vegetable substances, and renders them soluble in any aqueous menstruum. It effects all this without evolving any perceptible odour, or forming any extraordinary combinations. When pure, it is devoid of taste or smell; it is not soluble in any fluid that we are acquainted with, and if, as Liebig states, the porosity of a cubic inch of beech charcoal be equal to a surface of more than one hundred square feet, the extraordinary efficacy of Charcoal as an absorbent of gases, may be readily appreciated and satisfactorily accounted for.

Charcoal powder has been for a long period a favourite remedy in America, the Indies, and in many parts of Europe, for dysentery and the severe forms of fever, prevalent on shipboard and in tropical climates. Many cases were published in the early part of the present century, in which its efficacy in those disorders was clearly marked and well defined, dangerous symptoms rapidly subsiding under its use; and the authors of those cases affirmed, that a complete cure was often effected by this substance alone. It was stated by those who then prescribed it, that nothing so speedily relieved the flatulent condition of the stomach, or the tympanitic distension of the bowels, so painful to the patient and embarrassing to the medical attendant, as they occur in dysentery and some forms of fever, as Charcoal did; and it was furthermore believed by those who had used it, that it never aggravated any unfavourable symptom, even in those cases where it failed to give relief; but on the

contrary, that its administration in dysentery and typhus fever was followed by relief, absence of pain, repose, and a speedy amelioration of all unfavourable symptoms.

In order to appreciate the effects of Charcoal as a medicine, and the end and purpose for which it is recommended, a few brief remarks upon the uses, nature, and composition of the blood, as the essential principle of animal life, may not in this place be altogether inappropriate.

The blood is the vital principle, and upon its composition, quality, quantity and distribution, animal life depends.

Dr. Spurgin in his erudite lectures on Materia Medica, observes, that "in the process of the formation of animal being, we first observe a *fluid;* we have next the manifest initiaments, so to speak, of a nervous system; then the beginning of a vascular system, which follows the composition of a colourless fluid and precedes the composition of the red blood. * * * This order is continued throughout all the subsequent stages of formation, up to the very completion of the animal being; the direction, end, and power of the formative force, being all clearly and distinctly embodied in the organized product. * * * * The formative force not only begins the work of formation, it also proceeds with it, even to the end of life, and it is moreover identical with the power which repairs the wear and tear of the body, and which in case of accident, renovates the system."

We may state further, that the blood in its integrity consists of a transparent serum, holding many substances in solution, and having fibrine and colouring matter diffused in it;—that the human body, though composed of various parts, differing widely in structure, chemical composition, and function, derives all the materials for its formation, growth, and nutrition, from the same blood, which circulating freely, though not with equal rapidity or in uniform condition through every department, nevertheless, supplies each tissue with appropriate materials for its growth, sustenance, and repair, in the most complete, and yet, in the most economical manner. By a continuous and uninterrupted circulation of healthy blood, animal life is maintained, and the vital powers exercise their conservative influence, on the one sole condition, that the fluids of the body are healthy; that is, chemically correct in their several ingredients, sufficient in quantity and undisturbed and uninterrupted in their course and circulation. Reverse these conditions, and disorder, disease, and death, inevitably follow.

From the preceding observations on the properties and functions of the fluids of the animal body, it will be perceived, that any change in the composition or quality of the blood, must necessarily be attended with very important consequences in the animal economy, that a healthy circulating fluid is essential to the existence of a healthy condition of the animal solids, that these solids are continually formed and reformed by vital agency, out of this mysterious fluid,

and that to preserve it from deterioration and to renovate it when impure, should be the main aim and purpose of medical practice.

The diversity of functions allotted to the stomach, and its lengthy appendage the alimentary canal, and the necessity for their due and daily performance, their effects when disordered upon the general health, and their influence when healthy upon the progress of disease, have given to these organs a character and a rank which entitle them to attentive and serious consideration.

The stomach is the receptacle of all the raw material, out of which the formative principles of the blood have, by the processes of digestion and assimilation day by day, to be extracted ; it is the head quarters of a grand Commissariat, upon whose order, regularity, and efficient working, everything connected with health, or the want of it, absolutely depends; and to secure a methodical, regular, and satisfactory performance of the important duties that appertain to this department, demands no ordinary care and vigilance on the part of each individual.

From the previous remarks on the nature, composition, and uses of the blood, it will be at once perceived, that wholesome food and a proper use of it, are of primary importance to a healthy condition of the body; and that it would be utterly impossible to create or maintain a body corporate, competent to perform the important functions for which animal life was intended, were we unable to supply adequate nutriment in proper

quantity, to that indispensible and ever-changing fluid, the blood. Up to this point, then, the duty clearly depends upon the Commissariat; and the supply, selection, and mode of employing the divers substances used for food, are matters more deeply interesting to daily consumers, whose health and comfort are dependent upon the care taken in these particulars, than upon those who have the medical care of them hereafter, and upon whom devolves the duty of providing remedies for irregularities, properly chargeable to the processes of eating and drinking. We may here observe, that there have long been *demon spirits* of the deepest dye, lurking in the *cuisine;* let dyspeptics look to them, they have fastened themselves to the skirts of the Commissariat, and they must be exorcised before the medical department can help them.

But to revert to Charcoal and its use and application for medical purposes. It has been stated, that pure Charcoal in a state of powder, possesses two very singular properties; first, the power of absorbing gases to an almost incredible extent; and secondly, the capability of rapidly oxydising any dead animal or vegetable substances, with which it is placed in contact. From these well-established facts it has been inferred, that the operation of Charcoal on food contained within the stomach, would be somewhat analagous; that it would render it soft, and consequently more soluble; that it would absorb noxious and offensive gases when they exist in excess; remove flatulence, and by a similar process of slow combustion, render digestion both

easy and agreeable. We hope in the sequel to show, that these desirable conditions are really accomplished.

Flatulence and tympanitis are among the first disturbing symptoms when the stomach is out of order—symptoms that increase in intensity as disorder advances, until they become utterly uncontrollable when disease is at its height. Search the entire Materia Medica, and no medicine contained in it, seems half so well calculated to combat these difficulties. Charcoal will absorb the gases evolved by the food when imperfectly digested, and correct their fœtor; it will assist its decomposition, softening it and rendering it more soluble, and consequently, far better fitted for the purposes of nutrition: it will free the nutrient principles from all noxious or irritating gaseous matters, and thus contribute healthy chyle to renew and renovate the blood, and by promoting digestion and preventing flatus from over distending the stomach, it will afford a weak stomach every chance of recovering a healthy tone and action. But it will yet do more; if the stomach or bowels are ulcerated or otherwise diseased, as a melancholy sequel to dysentery, or fever, or where the ravages of schirrus or cancer are concluding their destructive career, we are acquainted with no substance more innocently tranquillising or comforting to the sufferer, than the pure Charcoal we have just now recommended.

Charcoal from its insolubility, is not affected by any other medicine, nor is it incompatible with any form of treatment. Indeed by alleviating certain morbid

conditions, and removing that state which prevents a healthy action, or excites a morbid one, it removes obstacles to the cure and becomes itself, indirectly, curative. It may, for these reasons, be combined with an alkali, as soda, or potash; or with alum, bark, rhubarb, &c.; or, it may be taken alone in half dram doses, in a little water immediately after each meal, or only after dinner if the digestion is merely at fault; this quantity may be increased to two drams, or *ad libitum.*

As before observed, pure Charcoal, finely powdered, has neither taste nor smell, and if taken in a little cold water, out of a hock or green glass—as the colour of the Charcoal may to some be objectionable, the dose will be found to be far from disagreeable. Once more, be it remembered, that the Charcoal must be pure and properly prepared: any empyreumatic oil, or pyroligneous acid contained in it, would certainly aggravate every existing symptom, causing great distress to the patient, and doing great injustice to the medicine.

Although the properties of Charcoal in purifying water, and correcting the smell of tainted meat or fish, and in resisting the destructive action of insects on wood, &c. were imperfectly known, and to some extent acted upon previously; attention was first fully directed to this subject by M. Lowitz, a medical practitioner of St. Petersburgh, in the year 1790; who in a well-written memoir, described how impure water could be rendered potable, by a process at once simple and

inexpensive. The application of M. Lowitz has proved of the greatest value, and it has constantly been acted upon in the construction of tanks and filters for water, ever since.

At a subsequent period, in 1793, M. Lowitz published a second memoir, recommending the use of Charcoal for decolouring various substances; and this decolouring property has been found to be highly serviceable in numerous branches of manufacture, up to the present time.

The ancient medical writers give us but little information on the properties and uses of Charcoal. Hoffman however, assigns to it anodyne powers, but his account of it is short and indefinite—"Charcoal in powder is said to constitute the basis of the epileptic powder of Saxe; and the chief ingredient, in the celebrated remedy for Goitre, of 'Amant de Villeneuve,' consisted of Charcoal prepared from sponge."

In the year 1799, Professor Alphonse Leroi in his lectures on the diseases of women, states, that he had "obtained great success from the topical use of Charcoal, in certain ulcerations of the womb." And about the same time, M. Duval published a short treatise, descriptive of its effects in fevers, &c.

In 1803, Dr. Brachét wrote a thesis on the use of Charcoal as a medicine, in which he has collected the greater number of the recorded opinions, on the curative properties of this substance. Dr. Brachét's thesis contains a great deal of interesting information, and might be consulted with advantage by those

interested in the subject. One or two of the cases as detailed by him, we shall introduce when treating of Charcoal as a topical application.

Dr. Brachét says, that "in every instance in which he administered Charcoal, it produced an uniform effect on the alimentary canal. He gave it as a bolus, mixed with honey or suspended in water; he noticed that it caused a sensation of warmth in the stomach, which lasted some minutes, and was rather agreeable than otherwise; this warmth becoming general and gradually diffusing itself over the whole body. He says it never caused flatulence nor pain in the stomach or bowels, though he found it relieved both. That the evacuations from the bowels were increased in quantity, and that they passed easily and without straining; being but slightly altered in colour, though occasionally they were a little blacker, and when formed, slightly covered with mucus. Dr. Brachét mentions it as a fact, deserving of notice, that among the few disorders that Charcoal burners are liable to, chronic affections were extremely rare, their ailments being almost all of them inflammatory." He mentions this as worthy of attention in determining treatment.

M. Sue prescribed Charcoal internally, in fevers of a typhoid or adynamic type, and he found it in many instances very efficacious.

At a later period, Charcoal was mentioned by many of the British medical authors, as an useful remedy in certain forms of fever and dysentery, as they occur in tropical climates; and Drs. Calvert, Chapman, Cal-

leagno, having used it with success on various occasions, they have written favourably of its properties. Still more recently, Sir I. Pringle, Dr. Abercrombie, Mr. Guthrie and others, have admitted its efficacy, and the army medical reports contain many isolated cases, in which its use had been attended with considerable benefit.

My friend, Dr. Sayer, informed me that he had prescribed Charcoal in fine powder to correct the fœtor of the breath, in a severe case of cancer of the stomach, in which it fully succeeded; and that the beneficial effects greatly exceeded the attainment of that particular object. Dr. Daniel, of Savannah, has recommended it in obstinate constipation, and in the nausea and confinement of bowels which frequently attend pregnancy.

Latterly, however, the internal use of Charcoal as a remedy for dyspepsia, and other painful disorders of the stomach and bowels has attracted considerable attention in Paris and on the Continent, in consequence of a very interesting memoir on the subject by Dr. Belloc, an Army surgeon of considerable talent and reputation.

The high opinion, expressed by Dr. Belloc in his memoir of the curative properties of Charcoal, caused a Commission to be appointed by the "Acadamie Nationale de Medicine à Paris," to investigate and report upon the merits of this substance, as a therapeutic agent. This report is so favourable to Dr. Belloc's views, and contains so many valuable cases,

confirmatory of his opinion, that we have introduced it at length, and we strongly recommend its attentive perusal :—

Report on the memoir of Dr. Belloc, Surgeon Major of the 6th Regiment of Hussars; on the Employment of Vegetable Charcoal in idiopathic and sympathetic affections of the Stomach and Bowels, by a Commission appointed by the "Acadamie Nationale de Medicine"—consisting of M. M. Recamier, Caventou and Patissier, *(rapporteur)*—

"There are certain remedies which, having for a time been overlooked and forgotten, in consequence of fresh experiments, have again recovered their reputation; such has been the fate of vegetable Charcoal. This substance may have fallen into disrepute from its having been recommended indiscriminately in a great variety of complaints, and also from the quality of the wood employed in the preparation of the Charcoal, being altogether unsuitable for the purpose. Struck with the great difference of opinion which existed among those persons who had written on the employment of Charcoal as a medicine, Dr. Belloc has collected upon this branch of therapeutics a series of personal observations, which are deserving the marked attention of the Medical Profession. To enable your Commissioners to repeat his experiments, this estimable practitioner has forwarded to the 'Acadamie' a sufficient number of jars filled with the powdered vegetable Charcoal. M. Caventou, has undertaken the chemical analysis of this substance, whilst M.

Recamier, and your reporter, M. Patissier, have devoted themselves to the investigation of its physiological and therapeutic effects. Our honourable colleagues, M. M. Husson, Fouquier et Dubois, (d'Amiens) expressed their readiness, at our request, to give the Charcoal a trial in the hospitals to which they are attached, and also to try it in their private practice, for which courtesy we beg here to offer them our sincere thanks.

The following are the reasons assigned by Dr. Belloc for his undertaking the use of Charcoal, and for making it the subject of new experiments :—

Being a severe sufferer myself, says Dr. Belloc, from a distressing disorder of the stomach and bowels, which had arisen from the fatigue and exposure I had experienced during a protracted and arduous service in Africa, from whence I returned home in an almost hopeless state, I decided upon making a trial of vegetable Charcoal in my own particular case, as I had previously exhausted every other means without deriving any benefit. Thinking that the Charcoal as commonly in use among pharmaceutists would answer my purpose sufficiently well, I caused some pills to be prepared with the powdered Charcoal and simple syrup. I commenced the use of them with a proper degree of caution. A short time after I had taken two of the pills, I felt a degree of ease and comfort in the stomach, which I had not experienced since the first time I fell ill ; it was however accompanied by a sensation of heat, and a slight degree of thirst. I then imagined that

this medicine, if prepared with more care, might act in my case very beneficially, and that I ought, most assuredly to augment the dose. I filled some earthen pitchers with some pieces of fresh wood of the poplar tree, free from the bark, and subjected them to a white heat, and I took every necessary precaution that this operation should be performed with all due care. I obtained by these means a perfectly carbonised Charcoal; I used this with confidence, and the relief I experienced was so prompt and decided, that I felt it desirable to persevere in the use of it. I thus by degrees became accustomed to take enormous doses, and those at any time in the day I chose. The more I took of the Charcoal, the more I found my health improved. I had suffered from constipation to an extraordinary degree, this constipation yielded very shortly; I could make use of food by no means easy of digestion, although before this time the lightest kind of aliment disordered me most painfully. It will scarcely be credited, but I have taken almost 500 *grammes* in a single day, without inconvenience; on the contrary, my health is so much re-established, that since that period I have suffered no indisposition, whilst previously I was compelled to leave the Service, and was confined to my room for several months. Although quite cured I still make use of the Charcoal occasionally, and I am persuaded that its use has protected me from any return of my sufferings; my constitution had been so much impaired that a relapse might have very readily occurred, but whenever the

slightest indication of disorder appeared, I made use of the Charcoal, and everything went right again.

Your *reporter* has had occasion to see Dr. Belloc several times, and his cure cannot be questioned.

Medical History of Charcoal.—Fully impressed himself with the curative power of Charcoal in chronic affections of the stomach and bowels, Dr. Belloc was desirous of knowing what opinion other authors entertained of this substance; in the course of his researches, he derived much information from a learned memoir, published forty-seven years previously by our venerable colleague, M. Duval, under the title, "*An appeal to Physicians, on the use of Charcoal,*" (Journal generale de medicine, par Sedillot t. xvii., p. 241.) Some time after this publication, Dr. Brachét, of Paris, in 1803, selected as the subject of his inaugural thesis,—the employment of Charcoal in Medicine. This dissertation is remarkable for an exact appreciation of the physiological effects of this medicament. In the "Dictionaire universel de matiere medicale et de therapeutique generale," of M. M. Merat et Delaus, a very important notice is taken of the use of Charcoal, recommending that its use should be reasonably restricted to the treatment of particular disorders. M. Barras also, in his work on Stomach Complaints, recommends the use of Charcoal in these affections.

Mode of preparing Charcoal.—The selection of the wood best adapted for the preparation of the Charcoal, is by no means a matter of slight importance; Martin Rolland Frederic Hoffman, made use of the wood of the

Linden tree. M. Belloc says, that he devoted much time to a series of experiments on the subject; hard and soft woods, both dry and in a green state, were carbonised by him; he tried on himself the Charcoal prepared from each kind; his stomach suffered considerably from these frequent trials,—he experienced a remarkable taste in his mouth, partly sulphurous, partly ammonical, with thirst, and frequently a pinching sensation at the pit of the stomach; his digestion was also much weakened by these experiments; he sometimes perceived painful excoriations on the mucous membrane of the mouth, which required soothing gargles or washes to heal them. Charcoal purified by acids did not furnish Dr. Belloc with any more satisfactory results.

Your *reporter* has tried to compare on his own person, Charcoal prepared by Dr. Belloc, and that which is sold by the pharmaciens of Paris: the latter has caused him heat in the mouth and disagreeable pains in the stomach, the Charcoal prepared from the wood of the *poplar* answers infinitely better. It may be stated then, that ten years' experience has satisfied Dr. Belloc, that the Charcoal made from the wood of the poplar was preferable to every other kind. For the preparation of the Charcoal then, says Dr. Belloc, I make use of poplar wood; this rapidly growing tree furnishing a wood very white and very soft. I do not select the body of the tree, because Charcoal prepared from old wood has an irritating effect on the stomach; I use the branches of three or four years growth, quite fresh,

and which have never been pruned, the bark of which had not been previously injured. I never used wood that had been grown on a low, damp soil, little exposed to the sun; such wood is more solid, the bark is generally covered with moss, and the Charcoal it furnishes leaves a disagreeable sensation in the mouth, and irritates the stomach. Wood cut fresh is to be preferred. I place the poplar wood, cut into pieces and freed from the bark, in the earthen pitchers well closed in, and expose them to a white heat, and a Charcoal is thus obtained which is light, sparkling, and devoid of ash. It is then placed in vessels full of water for three or four days, taking care to change the water three or four times, it is then drained, and reduced to powder before it is perfectly dry."

Chemical Analysis of Charcoal.—We have before stated that Dr. Belloc had forwarded to the Academié several bottles of the Charcoal prepared by himself, according to the directions we have just detailed; your Commissioners felt called upon to satisfy themselves of the purity of the Charcoal furnished, and they have therefore subjected the specimens sent to a series of experiments, which were performed under the inspection of M. Caventou, by M. Poumaréde, in the laboratory of the Academié. The Charcoal, in question, had not been subjected to the action of either water, alcohol, or acids. The analysis indicated in 100 parts, as follows:—

Moisture	45.60
Pure Charcoal	52.00
Ashes	2.40
	100.00

It was considered desirable to ascertain if this Charcoal, deprived of its moisture and ashes, would furnish the same results by an elementary analysis, as carbonic acid. The quantity of carbonic acid gas obtained was a little below the quantity indicated by the calculation, this being easily explained by the presence of a small quantity of hydrogen, produced evidently from the imperfect calcination of some of the wood. In every other respect, after a comparative experiment with the Charcoal of commerce, the same results were obtained.

To resume then, the Charcoal of Dr. Belloc did not seem to differ from other Charcoals, except in its extreme porosity, a property which enabled it to absorb a very great quantity of elastic fluids. This property may be owing either to its mode of preparation or to the species of wood used in its manufacture.

Physiological effects of Charcoal.—Taken before a repast in a dose of one or two teaspoonsful, drinking a little cold water after it, the powdered Charcoal prepared by Dr. Belloc did not leave the slightest disagreeable taste in the mouth, it merely left after swallowing it, a little of the powder clinging to the teeth arising from its not being finely powdered; this was easily removed by rinsing out the mouth with a little more water. After its ingress into the stomach,

a very agreeable sensation is felt, the appetite is excited, and if the inclination for food is gratified, the digestion is improved and hastened. Dr. Belloc is of opinion that the Charcoal promotes the flow of saliva, but we have not been able to appreciate this effect either on ourselves, or on those persons to whom we have administered it. This substance does not appear to be either digested or absorbed, it only traverses the intestinal tube, taking up in its course gaseous matters and fluids obnoxious to the system. The Charcoal of the poplar wood prepared after Belloc's plan, being but coarsely powdered presents a remarkable porosity, which gives it the property of absorbing the flatus, which is so often given off in large quantities in the stomachs of dyspeptic persons, and which causes considerable pain and distress to such invalids; the dejections become of course blacker in proportion to the quantity of Charcoal taken. Dyspeptic persons, who suffer from habitual constipation, are much benefited by the use of Charcoal, it keeps the bowels moderately open; its action does not merely assist the digestion, it permits of a more tonic and abundant diet, and it also allows a more active medical treatment if requisite, than it was able to bear before its use.

Mode of Administration.—The Charcoal may be prescribed in the form of pills, or lozenges; but the method Dr. Belloc prefers is to imbibe it in a little cold water, mixing it into a form of paste in a spoon, swallowing it, and afterwards drinking a little water. It is in this way that we have ourselves made use of

the Charcoal, and the way we have prescribed it in our private practice. M. Fouquier relates, that at the Hospital de la Charité where some of the patients objected to this mode of administration, he had caused the powder to be mixed with *bread* to please them; so true it is, that hospital patients are sometimes more difficult to please than those in private practice.

The doses of Charcoal that may be given with advantage, vary from two to six teaspoonsful a day, for a shorter or longer period according to the gravity of the indisposition. The dose ought to be augmented gradually, and Dr. Belloc states, "that he has himself taken as much as 500 *grammes* in one day!" It is well to remark, that the Charcoal powder is slightly moist, and that this may contribute to the weight. It may be used either before or after a meal, or even taken with the repast. Under its influence, dyspeptic persons feel no sensation of weight in the stomach after eating, digestion is performed so quickly, there are no eructations of flatulence, and nervous gastro-intestinal affections of however long standing, are much relieved in a very few days.

Medicinal Properties.—Hippocrates, Galen and Paulus Ægineta, have noticed, as we have done in our days, pregnant women and chlorotic girls, influenced no doubt by some conservative impulse, eat Charcoal with avidity. It is a matter of astonishment that these great observers did not take advantage of this remarkable practice, and try the effects of Charcoal in their time in gastro-intestinal nervous affections, both

idiopathic and symptomatic. It is in fact in these particular disorders that the beneficial effects of Charcoal are so strongly recommended by Dr. Brachét, of Paris, M. Barras, and by M. M. Merat and Delens. Dr. Belloc appears to us, to have established beyond all doubt the utility of this medicine, by the number of clinical cases that he has collected, in the various cities in which he has been quartered. We think it desirable to re-publish these cases in this report, as evidence of the therapeutic properties of Charcoal, with the object of inducing other practitioners to prescribe it, in a class of maladies which are too frequently a source of considerable anxiety, both to the patients and to the medical attendants. We shall now leave Dr. Belloc to report for himself.

Case I.—M. D., Major in a regiment of Curassiers, of a sanguine nervous temperament; had been attacked about ten years previously with a gastro-intestinal disorder of a severe kind. Being highly excitable, he experienced the most severe nervous attacks whenever anything went wrong: he had been obliged to abandon even smoking or taking coffee, which accorded very little with his military taste or inclination. M. D. having been apprised of the happy effects I had obtained from the use of Charcoal on myself, begged of me to take him under my care. Having investigated his case, I made him take, every day, four large spoonsful of the Charcoal in moist powder; one in the morning, one after each repast, and one, which was the last, an hour before his bed time. He had only taken it eight days, when his bowels became perfectly regular, and the stomach performed its functions properly.

Twenty-five days after, M. D. was able to smoke, take his coffee, attend less to his diet, and was in fact restored to perfect health. Some months afterwards, he came to my house in a state of great excitement; he told me that he felt a return of some symptoms so severely distressing, that it was impossible it could be otherwise, than that some formidable seizure was going to take place that would last several days. He felt sure it would be so, from the precursory symptoms he experienced. I re-assured him, and advised him to return to his house and take some spoonsful of Charcoal powder, until he felt relieved. An hour afterwards, everything terminated favourably; the crisis had not come on, and Major D. went out to dinner, and eat as heartily as he was accustomed to.

Case II.—M. D., had been a sufferer from a marasmus, or feverish wasting away for ten years. Under the influence of a decided chlorosis, she had lost her appetite, could live only on vegetables and acidulated or spiced substances; she felt the greatest repugnance to meat and to fatty substances, she was obstinately constipated, had headache, accompanied with vertigo, and often palpitations with shortness of breath, whenever she attempted to walk; she complained also of great general weakness, and suffered excruciating pains in the stomach, with great weight and oppression, especially after eating; she consulted me, and after ascertaining her condition, I prescribed the Charcoal powder, to the extent of four teaspoonsful a day; one spoonful morning and evening before each repast, and one immediately afterwards. The appetite soon began to improve. We have on several occasions perceived in similar cases, this sudden return of the appetite, following the act of swallowing the first dose of the Charcoal. Madame D. continued the use of the medicine for a month: the constipation was overcome very speedily; the invalid

could then eat with pleasure viands, which formerly only created nausea and disgust. Even roast or boiled food were ordered for her; she was able to take wine, which formerly occasioned her great burning in the region of the stomach: she seemed to be nourished by her food, she became stout, and her health was very soon after perfectly restored. In this person's case, the nervous affection of the stomach, was symptomatic of the chlorosis, the Charcoal powder enabled the stomach to digest proper food; this gave her strength and power, and she thereby gained flesh.

Case III.—Mademoiselle M., had been suffering for two years from a stomach and bowel complaint, which had so much increased during the last four months, as to render her unable to partake of any solid aliment; for after each meal, as well as during the intervals, she suffered the most excruciating pains in the stomach, with a great sensation of fulness, and disagreeable flushes of heat, which extended over the face; she was subject to frequent nervous attacks: despite her sufferings she was not much emaciated, although she lived upon a milk diet, and lowering food. I was called in to see her, and after enquiring into her case, I advised her to take a teaspoonful of Charcoal powder and I desired her to eat *immediately* after, a mutton cutlet, and some of the white meat of a fowl. How great was her surprise, to find that she digested this food extremely well; she was not able to do so previously, without suffering most cruelly. Digestion was accomplished in a very short space of time, as if by enchantment. This person continued the use of the remedy, eating her food with an excellent appetite, digesting it perfectly well, and the pains in the stomach left her entirely.

Case IV.—M. B., an officer of cavalry, suffered for a long time from a gastro-intestinal affection, which

was much aggravated by the most acute nervous impressions; his state was complicated by some convulsive phenomena; he was really in a condition painful to behold; sobs and tears escaped from him involuntarily: baths, sedatives, opiates, ice, preparations of iron, &c., all had been made use of without benefit; he had never wished to try Charcoal, his repugnance to it was so great, that I never urged it. One day when he had been suffering more severely than usual he came to my house quite terrified to tell me, that he had experienced the premonitary symptoms of an extremely acute crisis, and that to prevent its accession he would submit to any treatment I thought proper to prescribe. I made him swallow immediately, a large spoonful of the moist Charcoal powder. M. B. was astonished to discover that this substance had no disagreeable taste; he consented to take consecutively, two more spoonsful, which agreed with him very well; but his surprise was far greater, when, in a few minutes' time he enjoyed such calm and tranquil sensations, as he had not experienced for a great length of time before. The crisis he was so anxious about, never arrived; from this time he continued the use of the Charcoal, the pains in the stomach left him entirely, his digestion was excellent, and his health was soon perfectly re-established.

Case V.—Madame S., had been attacked while in Africa, where she had resided with her husband, a Captain in a regiment of Chasseurs, with an extremely severe nervous affection of the stomach, which first manifested itself, after having eaten very freely of oranges. The disorder commenced with an acute, tearing pain, accompanied by a throbbing at the pit of the stomach, and a sensation of cold, which alternately came on and disappeared. The pain was relieved by pressure, it disappeared also as soon as she took any food, but came on again in four or five hours after

eating, and then it was intolerable. Every month, at a particular time, the attacks were most severe. After having tried without being much benefited various modes of treatment, in which ether, opium, ice, morphine, the preparations of iron, bismuth, &c. were administered, she was under the necessity of returning to France, hoping to obtain by a change of climate, some relief to her sufferings. This afforded her some benefit, but it was not of long duration, and the attacks became very soon quite as severe, as they were previous to her return from Africa. Madame S. having become *enciente*, the pains ceased entirely during the whole time of her pregnancy; but after her accouchement they again returned, accompanied this time by vomiting. She evidently was becoming emaciated, her disposition getting morose and irascible, and her countenance was sad and wretched looking. It was about the 15th of August, 1847, that I was made acquainted with her case, and I immediately commenced the administration of Charcoal: up to the 18th of October, Madame S. had been quite free from distress of any kind, she took her food with a good appetite, her digestion was excellent, and her cheerfulness, *em-bon-point*, and fresh colour were quite restored to her. Being now in perfect health, Madame S. had for some time discontinued the use of the Charcoal. On the 18th of October, she was on the eve of parting from her mother, who had come over from Algiers to see her, she at this time felt a strange sensation, which soon worked up to an attack of ague; her head felt on fire, the mouth was firmly closed, the chest oppressed, with frequent sighing; she felt also throbbing at the pit of the stomach: Madame S. again had recourse to Charcoal, which did not fail to relieve her; she took two large spoonsful of it, and in a few minutes after, she felt calm and perfectly tranquillized, and she had no subsequent attack.

Case VI.—M. E., had suffered from severe gastrodynia for several years, he was at the same time highly hypochondriacal; his sufferings were so great, that he believed he was at the point of death: he was very much exhausted by a constant headache, which troubled him every day. His family, who were very anxious on his account, wished to place him under my care. I examined the condition of all his organs, with the most minute care and attention, and I discovered that M. E. had been attacked some years before, with a severe inflammation of the eyes, which had been treated at Paris by local applications; alteratives had not been employed. But a short time after his opthalmia had left him, the symptoms of the gastro-intestinal affection before described, made their appearance. M. S. for some time pursued a palliative mode of treatment, consisting of morphine, bismuth, citrate of iron, &c., and he partook of a tonic form of diet; he was extremely timid, and as he believed he had inflammation of the stomach, he was afraid to make use of Charcoal; he took, nevertheless, one teaspoonful, but he fancied that it disagreed with him. He was persuaded to take it *with* his food, as he might in that case be able to go on with it; the stomach was in no way disturbed by it, when taken in this manner, his food being easily digested, his evacuations were regular, his headache left him, and so did the indefinite pains he felt all over his body, and his cheerfulness returned. A month afterwards, he was placed under a course of iodide of potash, which he bore very well, and which restored him to perfect health. In this case, the Charcoal produced a triple effect; under its influence the pains in the stomach disappeared, his food was better digested, and he was thereby enabled to bear the medicine, necessary to effect a complete cure of his disorders; conditions that were not attainable previous to its use.

Case VII.—M. le Chevalier de l'H., a gentleman eighty years of age, suffered from disordered stomach for thirty years; he had used without benefit many empirical substances, such as the medicine of Leroy, Morrison's pills, white mustard seed, &c. He was recommended to take a teaspoonful of the powdered Charcoal, after each meal, and for the ten years that he was taking this remedy, he never suffered from a return of his indisposition; his bowels were always regularly relieved, and from that time he has enjoyed extraordinary good health, for a person of his age.

Case VIII.—M. D., a clergyman, had been for two years a sufferer from a nervous gastro-intestinal affection, characterised by the vomiting of all his food; he was often constipated for eight or ten days at a time, and was very thin and pale. Having heard of the great success that I had obtained by the use of Charcoal, he came to Poitiers, where I was then quartered, to consult me, and to ask me to lay down a plan for his using the Charcoal. Some hours after taking it, he experienced such immediate and decided benefit, that he could not resist the desire of informing me of it. His indisposition was a very severe one, and I have seen but few persons take the Charcoal in such large doses, and with so much satisfaction and avidity as he did. It was indispensibly necessary in his case: the vomiting was arrested as soon as he had taken the first dose, and the constipation yielded on the fourth day, and did not again return. M. D. continued this treatment for a month, and consumed no less than 4 *kilogrammes* of powdered Charcoal. M. D. now eats whatever kind of food he likes, having perfectly recovered his health, which has continued good ever since.

Case IX.—M. Deh., a veterinary surgeon at Lunéville, was a sufferer throughout the whole of the year

1846, until the month of August, 1847, from pains in the stomach, with obstinate constipation and severe cramps, which came on at intervals of from five days to a month, each attack lasting from six to twelve hours; these cramps had reduced him to a complete skeleton, and had brought on jaundice. M. Deh, had employed unsuccessfully a very severe dietetic regimen, laxatives and lavements often repeated, soothing potions, and the sub-nitrate of bismuth in combination with magnesia. In the month of September 1847, the powder of Charcoal was suggested to him, which he made use of with unhoped for success. A very few days were sufficient to restore the digestive organs to their normal state, the constipation was removed, his colour returned, and he soon recovered his portly condition.

From these clinical facts, Dr. Belloc draws the following conclusions :—

1st.—"All kinds of Charcoal do not act alike; carbonic acid does not correct their noxious and irritating effects; the Charcoal from the poplar wood, prepared as directed, has furnished the most satisfactory results.

2nd.—The best method of administering the Charcoal, is in powder moistened with fresh pure water; the ordinary dose is from three to four teaspoonsful a day, before or after meals: the dose may be increased with advantage.

3rd.—The powder produces an agreeable sensation in the stomach, improves the appetite, and quickens the digestion.

4th.—In nervous affections of the stomach and bowels, in those complaints which are so prevalent,

and attended with so much pain and inconvenience, but which do not confine the sufferers to their bed; such as weight and uneasiness after eating, nervousness from labourious digestion, dyspepsia, pain in the chest, waterbrash, &c.; for each of these disorders the powder of Charcoal is, the most effectual in relieving pain, restoring the digestive powers, improving the appetite, and enabling the stomach to bear food.

5th.—Besides these advantages, the Charcoal powder renders the stomach capable of supporting active medical treatment, if unable to do so previously.

6th.—It is necessary to be cautious, not to administer this remedy in inflammatory diseases, or in organic lesions of the alimentary canal; in such cases, the action of the powder would aggravate the mischief."

This, gentlemen, is a faithful analysis of the memoir of Dr. Belloc; we have given a tolerably full report of it, in order that you might appreciate its value; but the task of your Commissioners is not yet concluded; it is not sufficient, that a medicine recommended by one physician alone, however high in estimation he may be, should at once obtain a position in therapeutics; it is proper, that its curative power should be proved and tested by other practitioners, for it is well known that introducers of new remedies, permit themselves to be carried away by an unbounded degree of enthusiasm. This reflection induced your Commissioners, to subject the Charcoal powder,

prepared by Dr. Belloc, to some other clinical experiments. If we have not been able to do so in a great many instances, it has arisen from this fact, that stomach disorders, those which render life sad and miserable, without compelling the invalid to lay up, are not the class of ailments usually met with in hospitals, which are as every one knows, generally dedicated to the treatment of acute diseases.

CASE.—*Communicated by M. the Professor Fouquier.*—Marchal Rose, aged fifty-one years, a servant, was admitted into St. Anne's ward in the Hospital de la Charité, on the 11th of November, 1848. This woman stated, that she had laboured under the disorder which now brought her to the hospital, for five years, and that when residing at Beaujon she had been under the care of our colleague, M. Louis, who had ordered her to use alkaline baths, and to take the Vichy water. For the last five months this invalid had felt excruciating pains in the region of the stomach, which extended over both sides to the blade bones and the spine of the back. These pains, occasionally a little less intense, presented in the space of twenty-four hours three or four paroxyms, the duration of which were from one to two hours: they were so acute, as to cause her to scream. The pains were much aggravated after taking aliment, especially if it was warm: sudden pressure increased the pains, but moderate pressure applied gradually, such as that of the corset, seemed to alleviate them. Since the accession of her malady, she has been annoyed by a frequent inclination to vomit, and she is often sick from no ostensible cause, which comes on suddenly both before as well as after eating; the matter vomited consisting of a bitter, fœtid, glairy liquid, and never of food, whether the sickness occurred previous to or

after having taken a meal. For a fortnight this woman had been passing flatulent evacuations, having much the odour of rotten eggs; her appetite is sufficient, but she eats but very little, because the ingestion of food aggravates her sufferings. She is not feverish, nor has she any headache; the pulse is regular, beating sixty in a minute. The first day, three teaspoonsful of Charcoal were administered; on this same day, she had her bowels relieved; was slightly nauseated, but she did not vomit; there was no change as respects the pain. The two following days, the same quantity of Charcoal was administered, there was no nausea, the bowels still acting freely, still retaining an offensive smell: she experienced a sensation of heat at the pit of the stomach and over the bowels. The fourth day, the three spoonsful of Charcoal were borne very well, there was no action of the bowels, nor any nausea or sickness, and the pains in the stomach were less, and so also was the sensation of heat. Four spoonsful of Charcoal were now given; on the following morning, the fifth day, there was no pain in the stomach, but there were some fœtid evacuations. The sixth day she was much the same. On the seventh day, the pains entirely disappeared, and they did not return on pressure being made over the epigastrium; her bowels have not acted, but she vomited a little glairy mucus in the morning. Five spoonsful of Charcoal powder were administered; on the following morning the patient was well, she perfectly digested two basins of soup, which she had not done for five months previously. The days following, five spoonsful of Charcoal were taken. The state of this person was very satisfactory; there were no evacuations, no vomitings, nor any pains; she was able to eat, and her digestion did not trouble her. On the thirteenth day she had a diarrhœa, but nothing passed from the stomach. At length on the thirty-fourth day, this patient left the hospital, perfectly cured. Five weeks

after, she was seen by a pupil of the hospital, her health was then established, and she had had no return of any of her symptoms.

M. Fouquier relates two other cases of stomach disorder treated with the powdered Charcoal, but we are unable to draw any conclusions from either, in consequence of his having been obliged to discontinue its use. In the first instance, the patient was attacked on the sixth day, with an inflammation of the throat and air passages; and in the second case, small pox supervened. M. Fouquier, however, continues his experiments, and intends to get the Charcoal prepared as directed by Dr. Belloc.

Case.—*Communicated by M. Husson.*—A young girl, aged about twelve or thirteen years, living at a farm house, very healthily situated, has had several attacks of gastralgia, which have resisted every mode of treatment; sedatives, bitters, narcotics, sub-nitrate of bismuth, blisters to the epigastrium, &c., were tried in vain. She was treated with Charcoal, prepared as directed by Dr. Belloc; and the physician who attended her, states, that she is now completely cured.

Case.—*Communicated by M. Dubois (d'Amiens.)*—Madame C., aged forty years, was tormented for many years by severe pains in the stomach; digestion was performed at all times with considerable difficulty, it was sometimes suspended altogether. In the course of last summer, the gastro-intestinal pains were almost constant, the digestion quite at a stand, with obstinate constipation, great emaciation, and her weakness so great, as to prevent her from taking any exercise,

although she resided in a beautiful part of the country. Preparations of iron in every form, with sea bathing, alkaline baths, and Seltzer and Vichy waters, &c., &c. had all been used without any benefit. In despair at this, she tried Homœopathy, and was no better off; she then resorted to opiates, and invariably without relief. It was under these circumstances, that the Charcoal powder was employed; at first, in the dose of a tea-spoonful after each repast, and then in like manner a dessert spoonful. The first effect produced, was to obtain some action of the bowels, the constipation, which it had been impossible to overcome before, yielded; food was retained, and the patient could digest roasted meats, and her strength began to return. Unfortunately a severe flooding came on, which arrested her improvement. She had also an attack of erysipelas in the face, and other maladies, which placed her life in danger, and the use of the Charcoal was postponed until a more favourable opportunity.

Cases.—*Reported by M. Patissier.*—Madame P., aged fifty-two years, being separated from her family, during the sanguinary insurrection in June, 1848, experienced the most intense anxiety, lost her appetite, and suffered after the slightest repast, weight and oppression in the region about the stomach. Although she had no fever, and she slept tolerably well, emaciation came on rapidly. Dr. Belloc's powder of Charcoal was administered, in doses of from three to four spoonsful a day, before or after each meal. After the fourth day, she felt no more oppression or weight at the stomach; she digested roasted meat perfectly well, the appetite was keen, her flesh gradually returned, and cheerfulness succeeded to sadness: she continued the use of the Charcoal for several days, and her confidence in this medicine was so great, that whenever she found her digestion a

little out of order, she resorted to a teaspoonful of Charcoal, which instantly set it to rights. Having on one occasion none of the Charcoal prepared from the poplar wood, she purchased some other Charcoal at a chemist's in Paris, but this produced nausea.

A young married lady, *enciente* about three months, experienced disagreeable eructations in the mouth; a strong desire to vomit, and great burning in the stomach and gullet. Magnesia, bitters, infusion of rhubarb, gave her no relief. A dessert spoonful of the Charcoal powder was given before each meal diminished these annoyances, which did not entirely leave her until the sixth month of her pregnancy.

Madame A., aged forty-five years, of a nervous temperament, experienced in 1830 an attack of gastralgia, which in spite of narcotics, antispasmodics, and rigid dieting, continued for three years. From that time her health was satisfactory, and she was rarely troubled by any indisposition. When the revolution took place in February 1848, this lady was highly excited, and all the symptoms of her former gastralgia re-appeared: she had but little inclination for food, and pain in the stomach extending through from the *umbilicus* to the back, came on after partaking of the lightest repast. She had water brash, constipation, low spirits, desire for solitude, extreme susceptibility and emaciation, but there were no febrile symptoms. This lady was advised to take from three to four spoonsful of Charcoal a day: under the influence of this medicine, the appetite has returned, the digestion is less difficult and less painful, the evacuations are more easy, and the sleep more tranquil than before. After a fortnight's use of the Charcoal, the health of this lady was sensibly improved, and the colour of her complexion and her *em-bon-point* began to return.

It results, then, from the clinical facts presented in the memoir of Dr. Belloc, and from those which your Commissioners have had the opportunity of collecting,—

1st.—That the powdered Charcoal of the wood of the common poplar, may be employed with advantage, in the treatment of nervous gastro-intestinal disorders; that its therapeutic effects, do not appear to differ materially, from those obtained from the use of the Charcoal of light and porous woods.

2nd.—That these powders are not really efficacious unless taken in full doses; that is to say, four or five spoonsful a day, to be taken either before or after meals.

Your Commissioners consider, that Dr. Belloc has rendered service to practical medicine, in directing the attention of the profession to the therapeutic properties of vegetable Charcoal: they suggest that a letter of thanks be transmitted to this estimable *confrere*, and that his memoir be deposited in the archives of the Acadamié.

M. Burdin wished to remark, that he had seen a half mad woman, who had contracted a habit of eating Charcoal made from the pine wood: she eat half a pound a day for a fortnight. About this time her taste changed a little, and instead of Charcoal, she took bakers' ashes, in nearly the same quantity: this freak lasted eight days, or together for three weeks; strange to say, notwithstanding this depraved appetite, the health of this woman was not in the least affected by it.

The report was put to the vote and adopted.

It should have been previously stated, that long before the appearance of Dr. Belloc's memoir, the valuable properties of vegetable Charcoal as a remedial agent in fevers, dysentery, and stomach and bowel affections generally, had been publicly declared and ably commented upon by Dr. Borland, the now venerable and much esteemed Inspector General, and also by the late celebrated Dr. Robert Jackson, who, in the acute dysenteries of the West Indies, was in the habit of directing the use of finely powdered vegetable Charcoal as an injection into the bowel, to the amount of a drachm twice or thrice daily; while he exhibited the same drug in smaller doses, by the mouth, along with powdered rhubarb and ipecacuanha. Mr. Martin, of Grosvenor Street, has likewise used the same medicine, in the severe chronic dysenteries of tropical invalids, and he tells me, with signal effect. Some recoveries from apparently hopeless ulceration of the larger bowel, resulted, this gentleman thinks, from the use of Charcoal enemata.

The high estimation entertained by Dr. Jackson, of the medicinal properties of vegetable Charcoal in the febrile dysenteries of the West Indies, and subsequently in the epidemic bowel affections of summer and autumn, as they prevail in this country, will be best explained by the following extracts from the valuable work on "Febrile diseases," of this eminent and most observant army physician:—

"The *Powder of Charcoal*," observes Dr. Jackson, "has lately been noticed as a remedy for the cure of

intermittent fever. I obtained information in the year 1813, from Dr. Borland, Inspector of Hospitals for the Mediterranean Station, of the effects ascribed to Charcoal for the cure of intermittents; but, as I was not informed of the quantity to which it might be given with safety, or without inconvenience, I thought it right to ascertain the point by experiment in my own person. Accordingly I mixed a tea-spoonful of the powder—about twenty grains in a glass of pure water, and I observed, in swallowing it, that a soothing sensation diffused itself around as soon as it reached the stomach. Convinced by this experiment that the powder of Charcoal, as taken by the mouth, was safe and not disagreeable, and, reflecting on the changes which it produces upon ill conditioned ulcers, as well as on the effect which it is commonly known to possess of restoring spoiled meat to sweetness, I resolved to make trial of it in dysenteric fever, which was the most prevailing disease in the military hospitals in the island of Barbadoes at the time. The first experiment was made upon a soldier of the Royal Artillery, an athletic man. The symptoms were violent; blood had been abstracted from the arm to considerable extent; and calomel and opium—the more common routine, were then under exhibition. The disease still went on; the evacuations were frequent and small—mucous with mixture of blood; the tenesmus was so intolerable that the patient could not remain ten minutes in bed at a time; the distress was in fact great. Twenty grains of powdered Charcoal were now given in a glass of rice

water by the mouth, and one drachm, mixed in a gill of the same water, was thrown up by clyster. The relief was instant and perfect. I returned at an interval of two hours with a view to satisfy myself of the result The patient was then free from pain, tenesmus or other unpleasant symptom :—the relief was ascribed by him to the clyster. From the good effect of the powder of Charcoal, as given in the case stated, I thought it my duty to recommend a trial of it in other similar cases which were then in hospital. The effects were similar; and, from these trials, the virtues of Charcoal seemed to myself to be so well established in certain conditions of the dysenteric form of fever, that I communicated the information to the principal medical officers of the different stations within the command, requesting at the same time that trial might be made of it, and the results reported at the office of Inspector of hospitals at Barbadoes. The reports, which were transmitted from the different stations, were generally favourable; but they were not so uniformly favourable as I had expected they would have been,—a difference in part explained by the following fact. There were rarely any other but recent cases of dysenteric fever at Barbadoes; in the islands, there were many of long standing and of complicated form;—in these, Charcoal did not appear to be uniformly beneficial.

"1. Where the dysenteric form of fever is recent, and where the mode of action is simple, that is, chiefly manifested on the secretions of the mucous membrane

of the first passages, the powder of Charcoal given by the mouth, or administered by clyster where tenesmus is urgent, affords immediate and effectual relief. The excess of evacuation is not only restrained by it, but the matter of stool is generally changed, viz., from blood and mucus, putrid and offensive, to figured feculence. With proper attention to circumstances of management, the health is usually re-established in the course of two or three days. If the action of the disease be principally manifested in the lower part of the canal, as indicated by urgent tenesmus, &c., the powder is to be mixed with rice water or thin arrow root, in the proportion of a drachm to a gill, and injected by clyster: if the distress and uneasiness be more equal throughout the whole tract of the intestines, the Charcoal is to be given by the mouth, to the quantity of twenty grains, in a glass of rice water—sometimes with the addition of six or eight grains of rhubarb and three or four of ipecacuanha. It is to be repeated at intervals of four hours; and I may add that, so repeated, it rarely fails of giving immediate ease, even of effecting, as observed above, a permanent cure within three days. A man, aged sixty, of the poorer class of inhabitants of Stockton-upon-Tees, had been six or seven days ill of dysentery—the stools bloody, mucous, and frequent—the tenesmus constant and intolerable. A drachm of charcoal was given by clyster—and, by mistake, some rhubarb, ipecacuanha and charcoal, ordered to be taken by the mouth was added to it. The tenesmus ceased, and next day there was no

dysenteric symptom.—He recovered without relapse. 2. If the disease be complicated, that is, if the peritoneal coat of the intestines, or any of the more distant organs within the abdominal cavity sustain a material part of the morbid action, the exhibition of the powder of Charcoal, whether given by the mouth or by clyster, has no more than a partial effect, if it have any effect at all. In this case, the complicated condition is to be simplified by bleeding, bathing, blistering or other means suited to circumstances. When that is done, Charcoal resumes its place as a remedy for what may more properly be termed dysentery,—that is, diseased secretion from the interior coats of the intestine. 3. Where the dysenteric disease has been of long standing, the evacuations thin and watery, the tongue red and dry, smooth and glossy—with an erysipelatous blush throughout, the benefits of Charcoal, whether given by the mouth or by clyster, are very insignificant. I have no just grounds to say that Charcoal is then hurtful; but I cannot say with confidence that it is useful. 4. Where the disease has been of long standing, and where the structure of the coats of the intestine has been materially changed by its continuance, the powder of Charcoal is sometimes beneficial, sometimes of no value. For example, where there is ulceration in the rectum and lower parts of the colon, the stools being bloody, foul and putrid, the injection of the powder of Charcoal by clyster never fails to give relief: it even sometimes effects such material change on the diseased

surfaces as leads to a permanent cure. On the contrary, where the chief seat of the malady is in the superior part of the colon which the injection does not reach; or where there are grounds to believe that the structure of the intestine is much changed, and that the change extends to the mesenteric membranes, the benefits of the powder of Charcoal, whether given by the mouth or by clyster, are so uncertain, that no one can venture to estimate them. 5. Powder of Charcoal, given by itself or with the addition of a few grains of powdered rhubarb, has appeared to myself to be a remedy well adapted to the bowel complaints of children, and even to the diarrhœas of grown persons, more especially to such as occur in the autumnal season. The first dose generally gives relief; a second or third, for the most part, effects a complete change in the nature of the evacuations.—It is however to be borne in mind, that it is only where the disease is of a simple character, and where the action of it is chiefly manifested on the mucous secretion, that the result is so fortunate as it is here stated to be.

The powder of Charcoal, as stated above, was employed in the Mediterranean as a substitute for bark in the cure of intermitting fever. Some trials were made with it, in this form of disease, in some of the islands of the Windward and Leeward Island Station; but the results were undecided, or rather not favourable. Where the form was pure and simple intermittent, no material benefit ensued; where the type was remittent, the form bilious or gastric, the symptoms

dysenteric, the evacuations mucous, accompanied with anguish at stomach, nausea, flatulence, vomiting, &c., the good effects were signal: the distressing symptoms were not only removed, but the disease itself was arrested and often finally cured.

Besides the beneficial effects of the powder of Charcoal in dysenteric and gastric fever, the power which Charcoal possesses of rectifying the vitiated secretions of the stomach, whether connected with acute disease or chronic malady, deserve to be noticed in this place. Vomiting is often a distressing symptom in the fevers of the West Indies. Where the vomiting proceeds from actions which produce diseased secretion as the prominent effect, the powder of Charcoal, either singly or given in conjunction with the effervescing draught, is singularly successful in restraining it, even in removing it. It is of no avail, where the vomiting and nausea are connected with such irritations in the sentient system, as indicate unknown disorganizing modes of action in the substance of the brain itself. It is eminently useful, either alone, or mixed with some grains of rhubarb, in diminishing or removing flatulencies, sicknesses, nausea, crudities and other unpleasant sensation at stomach; such for instance as are more or less connected with vitiation of the secretions. Charcoal mixed with rhubarb in greater or smaller quantity, has appeared to myself, in late experience among the labouring poor, to be of singular efficacy in rectifying the vitiated secretions and indigestions from which that class frequently suffer"

Inflammation of the mucous membrane of the stomach and intestines, or the so called English Cholera, is a disease confined entirely to the mucous membrane, and not to be confounded with the more severe affection attacking the peritoneal covering of the stomach and bowels. The former is characterized by frequent and copious discharges by stool, each dejection being usually preceded by a rumbling noise and flatulent uneasiness in the lower bowels, which cease on the discharge taking place, but are again renewed before the succeeding one ensues. There are frequently sickness, nausea and vomiting, thirst, dryness of the mouth, furred or morbidly red tongue, the skin dry, &c. When these symptoms are unallayed, fever sets in, with much aggravation of the local symptoms, accompanied by severe griping pains, tenesmus, cramps in the limbs, frequent discharge of peculiarly fœtid matter from the bowels, varying in appearance, being sometimes pure mucus, or mucus mixed with blood, pus or a putrid sanies proceeding from ulcerated or gangrenous formations within the bowels. Masses of indurated fœces are likewise sometimes passed by stool; great emaciation and exhaustion rapidly come on, with burning heat and intolerable bearing down of the rectum,—there is now a rapid feeble pulse, hiccup, and most frequently the disease becomes complicated with affections of other organs remote from that in which it had its origin, having a large portion of the internal coat of the bowels apthous or ulcerated. These aggravations and complications require to be

treated by bleeding, blistering, fomentations, and other adequate measures, such as medical skill can alone direct under actual visitation; but for the form of dysentery, which acts principally on the mucous membrane, particularly where tenesmus, bloody and offensive evacuations are the prominent symptoms in the case, the powder of Charcoal, viz., twenty grains given by the mouth, and one drachm mixed with rice water or thin arrow root and injected by clyster, was found by Dr. Jackson to have the most instantaneous good effects in this form of the disease. Furthermore, Dr. Jackson states, that the powder of Charcoal was not known to him as a remedy applicable to the cure of dysentery until the year 1814, that the discovery was made by experiment, and the truth of it proved by ample experience during the time that he superintended the medical department of the army in the Windward and Leeward Island Station. On his return to England, numerous opportunities occurred among the poorer class of inhabitants of the place where he resided of confirming what he had previously observed. A bowel complaint had been frequent if not epidemic at Stockton-on-Tees, during the summer and autumn of the year 1818, and in many cases it had been harassing and obstinate to the modes of common treatment. A powder composed of twenty grains of Charcoal, ten of rhubarb, and five of ipecacuanha, the proportions of which were varied according to circumstances, never failed to give relief, or even to effect a cure where the disease was originally simple, or rendered simple by

other treatment. Where tenesmus was urgent, the Charcoal was also given by clyster. In all cases of diseased secretion from the interior membranes of the intestinal canal, whether in children or in adults, the effect of the powder now mentioned was sovereign, not less specific in this than Peruvian bark is in the cure of regular intermittents.

I am indebted to the great kindness and courtesy of Dr. Borland for a copy of the following interesting and important communication, addressed by him to the Board of Health, during the prevalence of cholera in the year 1853. It is a valuable testimony of his experience of the medicinal character of Charcoal; and when the length of service and vast opportunities of judging, afforded by the exalted position of Inspector of Hospitals, held by Dr. Borland for so many years, and embracing a lengthened practice both at home and abroad are taken into account, the opinion expressed by the venerable doctor will, doubtless, be received with every respect and deference.

[Copy.]

"October 4th, 1853.

"Gentlemen,—The medicinal value of prepared wood Charcoal—Carbo Ligni—was fully ascertained by Army medical officers during the last war, in the Mediterranean and West Indies. It proved a valuable remedy in dyspepsia, intermittent and remittent fevers, acute dysentery and diarrhœa; and, as the organs and membranous tissues affected in the two last named diseases are the same which cholera attacks, it may be inferred from analogy, that Charcoal will be beneficial in that most formidable malady. The trial,

not yet made, may fail, because cholera is very rapid in its course, and preventive means would be too late in application after characteristic symptoms have developed themselves. All that can then be done is to endeavour to mitigate their force, and to stimulate the failing power of life when collapse is taking place; therefore, it is not as a curative, but simply as a prophylactic, that I venture to recommend Charcoal to the notice of your Board. Tasteless and inodorous, it is powerfully antiseptic: it arrests the progress of putrifaction in dead animal matter, and tainted water filtrated through it regains purity and clearness. Many persons, not positively valetudinary, nor foregoing their ordinary occupations, but suffering annoyance from indigestion, flatulence, nausea, unpleasant taste in the palate and offensive odour of breath have, to my knowledge, been entirely relieved from all these gastric evils by taking a scruple or half a drachm of Charcoal powder in a wine glassful of cold water, morning and evening, for a few days.

"Presuming that cholera poison enters first into the stomach, extending its baneful influence along the linings of the bowels from the pylorus to the anus, it occurs to me, that if a tonic antiseptic substance, blended with the food, was brought in contact with the alimentary canal, the lurking poison might be neutralized or rendered innocuous—slight premonitory symptoms or sensations arrested—and thus the explosion of cholera in its hideous form be entirely prevented. Charcoal powder offers itself to my reflection as the preventive substance desired.

"The admirable sanatory Police inspections and plan of visitation from house to house in the cholera districts, give a facility of carrying into effect preventive regulations connected with diet. I would therefore suggest that individuals be required or invited by the authority, or influence of the inspecting health officers to take a small teaspoonful of Charcoal powder at each

meal, especially at the morning repast, before going forth to labour. The observance of a regulation for self-preservation will impart confidence to the mind and tone to the body. Surely there are means of escape from the destructive mysterious scourge, could they be discovered. In this age of scientific progress, let us not despair, but think and act! nor reject from trial any proposed antidote, because it may be vulgar or homely. When Jenner promulgated his grand discovery, and before triumphing over prejudice, he was caricatured and ridiculed.

"I have the honour to be,

"Gentlemen,

"Your obedient Servant,

"J. BORLAND, M.D.

"*Inspector General of Hospitals.*

"The Board of Health.

"Mr. Macauley, the Secretary, acknowledged the receipt, but I am not aware any other step was taken by the General Board of Health."

There can be no doubt that there are a very great number of persons who, not positively valetudinary, nor yet foregoing their ordinary occupations, are nevertheless, great sufferers from indigestion, flatulence, nausea, unpleasant taste in the palate, and offensive breath, and an irregular condition of the bowels, very troublesome and difficult to manage,—these persons are also frequently short-breathed, oppressed on lying down, and languid on making the least exertion. For such ailments there is no better remedy than the Charcoal powder, taken as directed in the manner recommended in Dr. Borland's letter.

The writer of these pages can testify to the relief afforded by Charcoal powder, in such symptoms, from his own personal experience, and also from the benefit that has accrued to others similarly circumstanced, for whom he has prescribed it. It may be proper occasionally to give a mild saline aperient, such as the following, once or twice a week, should the bowels not immediately respond to the use of the Charcoal. Take of hydrated carbonate of magnesia one scruple, Epsom salts two drams, compound tincture of cardamoms two drams, distilled water an ounce and a half, mix. To be taken early in the morning, once or twice a week. This draught he has been in the habit of prescribing for nearly thirty years, and invariably with good service. The Charcoal powder may be continued irrespective of the draught, with advantage. In some cold and languid habits, saline aperients occasion much discomfort, and are therefore, but seldom resorted to. For those persons, the following form of pill will prove an useful and agreeable substitute. Take of the extract of Baél two scruples and a half, compound rhubarb pill one scruple and a half; mix and divide into twenty pills; one or two to be taken at bed time.*

Bowel disorders of Children accompanied with Worms, &c.—The powder of Charcoal either alone, or in com-

* The Baél or Béla, is much used in India for dysentery and diarrhœa, and is rapidly establishing its reputation in this country, as an useful medicine in those complaints. Messrs. Bainbridge and Pound were the original importers of it.

bination with other remedies, would prove a highly appropriate and serviceable medicine for those persons of relaxed habit—more particularly children—whose bowels contain a preternatural quantity of mucus, or slimy matter, or who live much upon green vegetable diet, or ill-cooked, decayed, or semi-putrescent food. Among such a class, itching, bearing down of the fundament, frequent desire to go to stool, excoriation about the anus, with mucous or bloody discharges, are the predominant local symptoms. A Charcoal enema, consisting of one dram for an adult, or half a dram for a child, in three or four ounces of thin gruel or rice water, injected into the bowel, and repeated once or twice a day for two or three days, would afford the greatest comfort and relief. If the presence of worms is suspected—which may be pretty correctly surmised if the child complains of colic, has variable appetite, fœtid breath, grinds his teeth during sleep, picks his nose, and has a tumid pendulous belly—then Charcoal powder, in doses of ten or twelve grains, combined with three grains of rhubarb, and one grain of ipecacuanha should be administered by the mouth as well, every night at bed-time, until the symptoms are mitigated, and the child's health improved. It is in cases such as these, as well as in the ordinary weak digestion of adults, that the use of Charcoal powder, as a prophylactic, would be found of the greatest advantage. I have myself, derived the greatest benefit from eating a biscuit, prepared for my own use, and containing, in each, thirty grains of pure vegetable Charcoal. This

biscuit is most agreeable to the taste, and satisfying to the stomach; it arrests the formation of flatus, and promotes the digestion of the food, and in a very short time after it has been swallowed, it produces that indescribable sensation of comfort, unfortunately so little experienced by many of us at the present time—namely, a happy oblivion for a few hours at least that we have any stomach at all! It is an excellent and convenient luncheon biscuit; one, two or three, should be eaten daily, as the case may be, taking one either before or after dinner, or any other meal, when it may be inconvenient to take the Charcoal powder in water. The form of biscuit is an excellent method of administering the Charcoal to children, as the taste may be made to suit any palate; those I use, as before stated, are most agreeable, and any child would like and enjoy them. The colour is the only objection, that is decidedly black, and moreover, it cannot be otherwise; but in every other respect the biscuits are perfectly unexceptionable.

It has been remarked that wholesome food, and a proper use of it, are of primary importance to a healthy condition of the body. Food then, being evidently the staff of life, and also its chief enjoyment, how essential is it that in these particulars we exercise a sound judgment, and especially guard against those indiscretions that invariably involve us, sooner or later, in endless discomfort; poisoning every enjoyment in life, and hastening the advent of a premature old age. Food, sleep, raiment, air, exercise, ablutions, are all natural requirements that cannot be dispensed with,

if we wish to enjoy health; and happily, they are all of them bountifully afforded by a kind Providence; and under certain conditions, they are readily attainable. These necessary wants however, are supplied so abundantly for *use*, and not for the mere gratification of any gross or sensual appetite. Excess in the employment of either, would tend to no good result; while in the matter of food, the subject we are more especially considering at this moment, excess becomes a positive and never-failing source of evil, entailing sicknesses which endure, more or less severe, during a considerable portion of our lives, and which are the penalties we have to pay for our transgressions in this respect.

A very slight inspection of our alimentary system, would give us too much reason to conjecture that the greater part of our bodily achings and ailments, have their origin in an over-loaded stomach. Let us for once take a drive through the gastric regions of a regular performer at a civic feast, and as a matter of business just jot down, what we observe *en route*, what a mass of incongruous aliment is here exposed to view,—hard and soft, light and heavy, sweet and sour, salt and spicy, all floating in a pool of the choicest wines of France and Spain!! what a salubrious neighbourhood to live in, if the receptacle for all this belongs to somebody else! what a charming store of comestibles to preserve *chez nous*, should the property unfortunately happen to be our own! We have read of an ancient Roman who could despatch at one supper,

500 figs, 100 peaches, 10 melons, 20 lb. of grapes, 100 ortolans, and 60 oysters; and there have been many zealous imitators in later times of this notorious glutton, emulating his achievement with still grosser materials. Stomachs, such as these, we class among the incurables, and we have no remedy in the Materia Medica that will be of any avail in their cases. Happily these are exceptional cases: they may perhaps learn a salutary lesson from the irrational animals by which they are surrounded, but so persisting, neither Charcoal nor any other medicine can do them any good. We have, however, no desire to enter into details in the matter of eating or drinking; as we have before remarked, the consideration of this subject properly belongs to the Commissariat, and our vocation does not appertain to that department; nevertheless, a few general hints may assist some of those who have no very anxious desire to become permanently dependent on the professors of physic, for the crumbs of comfort that physic can afford them; and to those, it is to be hoped, our observations will not be altogether inappropriate nor unsuccessful.

There are some other practices rife among us, as well as excesses and irregularities in matters of diet, and that tend in our opinion much to engender disordered stomachs, and sadly to impair their healthy action; so much are we persuaded of this, that we must be excused for pointing out one as especially deserving to be noticed in a work of this description; we allude to the prevailing use, or rather the

abuse, of Tobacco. A learned physician, not long since deceased, an undoubted authority in all matters relating to stomach disorders, has described the effects of tobacco on the human constitution in so clear and so graphic a manner, that we transcribe as follows what he has written, as a very correct exposition of our own opinion on the subject. Dr. Prout says,— "There is an article much used in various ways, though not as an aliment, the deleterious effects of which, on the assimilating organs &c., require to be briefly noticed, viz., Tobacco. Although confessedly one of the most virulent poisons in nature; yet, such is the fascinating influence of this noxious weed, that mankind resort to it in every mode they can devise, to ensure its stupefying and pernicious agency. Tobacco disorders the assimilating functions in general, but particularly, as I believe, the assimilation of the saccharine principle. I have never, indeed, been able to trace the development of oxalic acid to the use of tobacco; but that some analogous and equally poisonous principle (probably of an acid nature) is generated in certain individuals by its abuse, is evident from their cachectic looks, and from the dark, and often greenish yellow tint of their blood. The severe and peculiar dyspeptic symptoms sometimes produced by inveterate snuff-taking, are well known; and I have more than once, seen such cases terminate fatally with malignant disease of the stomach and liver. Great smokers also, especially those who employ short pipes and cigars, are said to be liable to cancerous affections

of the lips. But it happens with tobacco, as with deleterious articles of diet, the strong and healthy suffer comparatively little, while the weak and predisposed to disease, fall victims to its poisonous operation. Surely if the dictates of reason were allowed to prevail, an article so injurious to health, and so offensive in all its forms and modes of employment, would speedily be banished from common use."

The want of sufficient mental or bodily rest may be set down as conducive in a very considerable degree, to the promotion of a weak and irritable condition of the stomach and bowels. One of the prevailing follies of the day is a morbid desire for excitement, and the more startling and out of the usual order of things the programme, the more eagerly is it sought after, and hunted down. Excitement either in business or pleasure inordinately followed up, is far more pernicious in its results, and leads to more disturbance to the processes of digestion than people are aware of; it robs mind and body of that natural repose and quiet without which both languish and decay, and it engenders disease by converting "Nature's sweet restorer, balmy sleep," into a watchful, laboured, and unrefreshing somnolence. Let then the busy, anxious, overtaxed mind and body rest awhile, whenever opportunity offers.

Charcoal in Leucorrhœa and other uterine affections.—It has been already remarked that the topical application of Charcoal had obtained great success in certain ulcerations of the womb, and that Professor Alphonse

Leroi, strongly recommended its use in that class of maladies, in his lectures on the Diseases of Women. It has also been shown that immediate relief was afforded in ulcerations of the rectum, accompanied by tenesmus, straining, and fœtid mucous or bloody stools, by Charcoal enemata, as practised by Dr. Robert Jackson, Mr. Martin and others: reasoning then from analogy, Charcoal seems to be a remedy calculated to prove extremely serviceable in vaginal and uterine affections accompanied with discharges, as they exist, with or without ulcerated surfaces; disorders which are unfortunately productive of great distress, and are too often but little under the control of any internal medicine. In cases such as these, Charcoal injections into the vagina, might certainly be used with singular advantage; they would correct the fœtor and destroy the acrimony of the discharges incident to such complaints, and thus soothe and comfort the patient, while other constitutional treatment was being pursued. Two drachms of Charcoal powder mixed with half-a-pint of a moderately strong infusion of green tea, would be an excellent injection for this purpose; it should be used morning and evening, and the degree of temperature regulated by the feelings of the patient. The similarity in anatomical structure between the vagina and the lower bowel, and their close and intimate connection to each other, their nervous sympathies and their frequent participation in the maladies of each other, render it more than probable, that an application which has been found of such undoubted

efficacy in the formidable disorders of one of these organs, will prove of equal advantage when applied to the treatment of similar affections in the other.

It is much to be regretted that so few cases, illustrative of the effects of Charcoal on the human constitution, are to be found in the records of medical experience in this country; some instances of serious maladies, in which Charcoal was used with considerable success, have occurred in the practice of many eminent practitioners, but the cases referred to happened at long intervals from one another, and have never been recorded beyond their own case books; some are known only by report, and others are only to be found by a lengthened search through the works of medical authors, whose treatises refer principally to the diseases of foreign climates; while for the cogent reason assigned by the French Commissioners, for the few instances in which they had experimented with Charcoal, "that stomach disorders, those which render life sad and miserable, without compelling the invalid to lay up, are not the class of ailments usually met with in Hospitals, which are, as every one knows, generally dedicated to the treatment of acute diseases," we have been unable to glean from our own Hospital reports any information on the medicinal effects of Charcoal, administered internally, for the relief or cure of disease.

There may be some further explanation for this, which it would be well to mention. The effects of Charcoal on dead animal substances has been hitherto

he employed animal Charcoal as an antidote to certain poisons. Dr. Garrod draws the following conclusions as the result of his experiments.

1*st.*—"That animal Charcoal has the power of combining in the stomach with the poisonous principles of animal and vegetable substances, and that the compounds thus produced are innocuous, therefore when given before these poisons become absorbed, it will act as an antidote.

2*nd.*—That animal Charcoal will absorb some mineral substances and render them inert, but so large a quantity of the Charcoal is required that it is not so well adapted for many poisons of this class as their own special antidotes,—the effects of arsenic, however, appear to be better combatted by this than by any other article.

The animal charcoal made use of was purified by digesting ivory black in hydro-chloric acid, and afterwards washing and heating it to redness in a covered crucible." Dr. Garrod is of opinion that vegetable Charcoal possesses but a small antidotal power compared with animal Charcoal, while lamp black is totally devoid of the property.

Dr. Rand, of Philadelphia, had previously recommended the use of animal Charcoal as an antidote to poisons, in a paper published sometime since, in the medical journals.

We are not aware that this most important property ascribed to Charcoal has received further elucidation from any more recent experimenters; but Dr. Garrod in his treatise on the "Essentials of materia medica," published not long since, after describing Charcoal as

being employed on "account of its absorbing power as an antiseptic, and corrector of acidity and flatus in the stomach and intestines, and to correct the state of the fœces in some diseases;" further states, "that its antidotal power against vegetable poisons is very great, rendering inert opium, nux vomica, aconite, and almost all the active organic poisons." We cannot under value this testimony, but we sincerely wish we could corroborate it by some additional evidence.

Wood Charcoal was exhibited by Gölis in protracted cough with fœtid expectoration. He ordered it mixed with powdered liquorice in equal proportions, in the dose of a teaspoonful twice a day. It is sometimes applied to scrofulous sores and porrigo; if the eruption be humid it is simply sprinkled over, if dry it is to be applied in the form of ointment,—one drachm of Charcoal powder to six drams of lard; or, equal parts of Charcoal and rhubarb powder, for inspersion,—here it acts merely as a mechanical irritant. The foregoing extracts are from Mr. Ure's work on materia medica.

The flesh of animals which have died of disease has often produced severe effects by contact with the abraded skin, and when eaten has destroyed life, either by producing violent cholera, or by creating a similar disease to that under which the animal laboured. The glanders communicated to man from the horse, and the diffuse inflammation caused by punctured wounds inflicted in dissection, or in preparing meat for the table, are familiar examples of the effect of diseased animal matter applied externally to the human body. Animal

very imperfectly understood. Some eminent chemists persist in calling it a powerful *antiseptic*—they still think that a substance which, masking its proceedings by absorbing all odours, and concealing its operations by destroying all offensive effluvia, *thus* arrests the progress of decay; this inference is opposed to our present experience, and is also at variance with the results of recent experiments.

Dr. Stenhouse, in his interesting lecture, delivered in March, 1855, at the Royal Institution, has very clearly explained the distinction between the action of Charcoal and that of the well known antiseptic substances—alcohol, salt, nitre, &c., and it is to his investigations that subsequent enquirers are indebted for much valuable and instructive information upon this subject. It has been ascertained beyond a doubt, that Charcoal promotes, assists, and accelerates the decomposition of all dead animal or vegetable matter, that it renders animal fibre first soft and then soluble, that it arrests the evolution of noxious gases, absorbing and oxidising them as soon as generated, while these changes are going on, and that it thereby prevents them from exercising any pernicious influence.

Thus, as before observed, the absence of any well understood therapeutic principle, may have had some influence in retarding the internal use of Charcoal as a remedial agent, while the kind of Charcoal made use of in former trials, its purity, its freedom from empyreumatic oil, pyroligneous acid, or irritating saline

matter, its freshness, porosity, and the degree of fineness to which it had been levigated, were matters which most probably, in the majority of instances, were wholly and entirely overlooked and unattended to, and which have thus most improperly operated to the prejudice of this medicine.

It is impossible to peruse the observations of even the limited number of writers on materia medica and therapeutics, who have expressed any opinion upon the properties and *modus operandi* of Charcoal, without being struck with the crude and imperfect information they afford, and also with the strange and contradictory conclusions at which they have arrived. But while chemists are at issue as to the meaning of a term, let the profession practically test the utility of this much neglected material as a medicine. The evidence of its efficacy in a great variety of disorders is strong and conclusive, and the name, character, and reputation of those who have extensively used it, through a long series of years, and whose opinions have been strengthened and confirmed by the more recent experience of the equally eminent men of our own time, introduces vegetable Charcoal once more before the profession, as a medicine deserving every reasonable confidence, and fully entitled to be submitted to an extensive, impartial and unprejudiced trial.

On the use of Charcoal as an antidote to Poisons.—In the transactions of the Medical Society of London, Vol. 1, (new series) there is an interesting paper by Dr. A. B. Garrod, detailing some experiments in which

occurring in which the symptoms could be traced distinctly to the use of diseased or putrescent food, Charcoal powder be administered largely, with a view to the rapid condensation of noxious gases and the decomposition or oxidation of the contents of the stomach. Charcoal might render the morbific matter innocuous, and upon the testimony of Dr. Garrod and Dr. Rand, we should certainly with some confidence give it a trial.

To external injuries produced by the bones or teeth of putrescent, diseased, or rabid animals, we should promptly apply Charcoal in powder or as a poultice, with reasonable expectations that the Charcoal would prove of service.

On the external use of Charcoal in Hospital gangrene, scrofulous ulcers, and sloughing sores.—Mr. Laurence Ormerod, of St. Mary's Hospital, recently communicated to the Medical journals, some interesting observations on the use of Charcoal as a topical application to sloughing parts. He says, "I took the body of an English terrier, weight about ten pounds, placed it on a stone floor in a small apartment, and lightly covered it with Charcoal. Although the weather was very warm, not the slightest odour could be detected. By some accident the Charcoal was disturbed, and a large portion of the mass was left uncovered; in spite of this, the circumjacent Charcoal was sufficient to prevent any offensive stench. Upon seeing this, I left the body completely uncovered, merely surrounding it with the deodorizing agent; this again prevented

any disagreeable smell. Having determined this fact, I again covered the carcass. In less than a fortnight, not a particle of flesh remained upon the bones, which were picked perfectly clean, and were of a snowy whiteness." These experiments corroborate Dr. Stenhouse's remark, that Charcoal is not, as generally believed, an antiseptic, but a hastener of decomposition. Two of the objects in view in the treatment of gangrene are, the quick removal of the slough, and the destruction of the malarious influence which causes the disease to spread from one wound in a ward, to all wounds that may be in it. Mr. Ormerod submits, in respect to the first of these objects, "that if a substance could be furnished that would rapidly absorb the slough as soon as it was formed, without pain and inconvenience, easy in application, and positive in result, a great desideratum would be obtained;" and this he believes Charcoal does, as shewn by the above detailed experiments. His mode of applying Charcoal as a poultice, is to moisten it with as little water as will be just enough to cause coherence of the particles: the natural heat of the part soon causes evaporation of the moisture, so that the application in a very short time is dry, or nearly so. As, however, there is a little difficulty in thus concocting the poultice, he proposes having it made wet, and then putting it before the fire till nearly all the water is evaporated. Poultices thus made have a surprising effect in rapidly absorbing sloughs, when fairly formed and isolated. In St. Mary's Hospital, last summer, there occurred

food when decayed or putrescent has, when eaten, frequently been the cause of severe and dangerous symptoms similar to those of irritant poisoning. The cases that occurred in Germany from eating sausages, described in Hufeland's Journal, and re-printed in Dr. Guy's manual of Forensic medicine, page 508, and the more recent very interesting case, which occurred in the practice of Mr. Michael, of Swansea, may be taken as striking examples of this form of poisoning. Mr. Michael's case is as follows :—

Case of fatal poisoning by German Sausage.—"On March 22nd, 1855, I was desired to see a child living in Postern Lane, Swansea. Upon arriving at the house, I found a fine little boy, between four and five years of age, lying on his grandmother's lap. There were five other children. The father was a tailor, and the family was in great destitution. The mother had been given the evening previously a German sausage, of which the eldest son had partaken at once. This had made him ill through the night; vomiting and purging had taken place to a considerable extent. The little boy now ill had eaten some of the sausage (according to the statement of the mother, only one or two very thin slices) for breakfast, about two or three hours before I arrived, at two P.M. Shortly afterwards he had vomited. About half an hour before I saw him, convulsions had come on, which had alarmed his parents; he had also been violently purged. When I saw him, the general surface was cold; the limbs rigid; the teeth very firmly clenched; the pupils largely dilated, and insensible of stimulus; and he had occasional convulsive spasm of the lips. The lips were livid; the face was deadly pale; no pulse could be felt at the wrist; and the respirations were only three in

the minute. He died in about ten or fifteen minutes, and about three hours after eating the sausage, as nearly as could be learnt from the confused statements of the mother.

The remaining portion of the sausage, which was one of the German smoked and dried kind, showed some incipient softening and decomposition (not putrefactive) at the surface; the interior both looked and smelt good. Careful analysis detected no traces of metallic poison. The mouldiness frequently spoken of by authors could not be seen.

The *post mortem* examination showed the stomach half full of pieces of sausage, floating in a pulpy mass, half digested, of the same. Considerable irritation and mammillation of the mucous coat existed, especially towards the pyloric orifice. The mucous coat of the small intestines was irritated throughout, small puncta of blood being observable over the surface, which was bathed in increased mucous secretion. The brain was congested, as were also the thoracic organs. The other portions of the body (which, although well formed, was much attenuated) were healthy.

This case, so far as I can learn, is the first that is known to have occurred in England, although in Germany such cases are fearfully prevalent. In Wurtemburg alone, according to official returns, more than four hundred cases have occurred in the last fifty years, of which a hundred and fifty died."

In such cases, Dr. Guy observes, that the poisonous quality of the food is developed only in the first stages of putrefaction, but disappears when that process is far advanced.

In neither of the cases related is anything mentioned on the subject of treatment; we are therefore at full liberty to suggest that, in the event of any similar case

an attack of epidemic gangrene. In one case, it appeared in a most severe and aggravated form in the stump of a boy, who had had his hand removed, sloughing extending up the arm for about two inches: in three days the slough was removed entirely. An infant suffering from a severe burn, had two enormous sloughing masses, extending in one leg from the knee to the ankle, in the other, involving the whole of the calf: in two days and a half both were removed. A man was admitted with a sloughing sore upon his leg: a poultice of this kind was put on, and in six hours the dead portion was reduced in size fully one quarter. At the same time, the poultice thus made effectually prevents any odour or putrefying exalation proceeding from the slough, and pervading the apartment.

Dr. Brachét, before referred to, gives the following case:—

"A Chasséur de la Gàrde had an open ulcer of considerable size, which was discharging copiously healthy matter. It had existed three weeks, at which time it looked favourably. On the 22nd day, however, it became livid and was covered with gangrenous spots, the patient had a great inclination to vomit; was feverish, and complained of most severe pains in the lower parts of the bowels. Thirty grains of ipecacuanha were prescribed, for the morning of the 23rd, the use of lemonade and a bolus of camphor and nitre. 24th.—Passed several bilious evacuations; the fever had abated; the ulcer was covered with gangrene. It was ordered to be dressed with powdered bark, camphorated spirits of wine, spirits of turpentine, &c. 26th.—The ulcer continued in the same state, when powdered Charcoal was applied. 28th.—The discharge

was much more healthy; the Charcoal was continued, and in a fortnight from the first application of the Charcoal, the ulcer had healed, and the patient was discharged perfectly cured.

B., aged 58 years, had for four years ulcers on the left arm, occasioned by exfoliation of the bone. These ulcers gave out a fetid odour all the year; but in the summer the smell was insupportable, both to the patient and those about him. When he presented himself, Charcoal in powder was applied to all the ulcerated surfaces, solely with the expectation of getting rid of the smell. This object was attained; but the application could not be continued for several succeeding days, from the severe pain he suffered. By interposing lint between the Charcoal and the ulcer, he was enabled to bear the application perfectly well, and the object for which it was applied, was fully realized."

Dr. Brachét remarks, that the progress of gangrene is more rapid, and its effects more disastrous in females, than in males.

Charcoal mixed with bread crumbs or yeast, has long been a favourite material for forming poultices, among army and navy surgeons; and the Charcoal poultice has also obtained a high character in hospital practice as an application to sloughing ulcers and gangrenous sores; it is unnecessary to mention other instances of its utility, for in this form Charcoal is now admitted into the London pharmacopæia, and it is in general use in all naval, military, and civil hospitals. It is scarcely necessary either to repeat the caution previously expressed, that the Charcoal used, be freed from empyreumatic oil, pyroligneous acid, or any irritating saline matters, by previous purification; this

is as essential to its success as a topical application, as it is to its utility as an internal medicine.

On the use and application of Carbonaceous Substances as Deodorants and Disinfectants in Sanitary Operations.—The manner in which Charcoal acts in dealing with and destroying the various noxious gases which are produced by the decomposition of animal and vegetable matter, has been so clearly and ingeniously enunciated by Dr. Stenhouse in his lectures, and by his talented commentator, Dr. Forbes Watson, in two most interesting and conclusive communications to the Society of Arts journal, that the principle, as they have explained it, may now be considered an established fact. Carbonaceous substances facilitate the decomposition of animal and vegetable matter, as previously stated, by rapidly oxidising it; they absorb gaseous vapours and resolve them into innocent products; they prevent noxious effluvia from escaping from drains, cesspools, and other foul ill-ventilated places; they correct the fœtor of dead bodies, and prevent their exalations from contaminating the surrounding atmosphere: they have many advantages over the preparations of chlorine as they do not injure the texture nor destroy the colour of the most delicate fabric, nor do they corrode any metallic substances; they do not liquify, nor give off noxious odours, neither do they impart taste, colour, or smell, to any substance they come in contact with; water filtrated through Charcoal becomes pure and bright, and is made sweet and wholesome. These substances are dry, cheap, and easily obtained

of one or other kind in most localities, and they are so free themselves from all noxious or hurtful properties that they may be trusted in the hands of the most ignorant without risk or danger.

Professor Johnston, in his very useful work on the "Chemistry of Common Life," makes the following interesting remarks on the properties of Charcoal; they fully corroborate what we have just stated. The remarkable action of Charcoal on decayed animal and vegetable substances is the result of three properties, the influence of each of which it is important to distinguish. These are—

a. "Its remarkable porosity. In consequence of this it absorbs gaseous substances in large quantity, and condenses them in its pores. A cubic inch of light wood Charcoal will absorb nearly 100 cubic inches of gaseous ammonia, between 50 and 60 of sulphuretted hydrogen, nearly 10 of oxygen, and lesser proportions of other gases. This property is for the most part physical, and is possessed in a considerable degree by other porous substances.

b. The special affinity which Charcoal exhibits for certain strong smelling and colouring substances. So powerful is this affinity, that if a table-spoonful of finely powdered animal Charcoal, or twice as much of newly burned wood Charcoal, be shaken up with a pint of stinking ditch water, and the mixture filtered, the water will pass through bright, clear, and with little of either taste or smell. If instead of dirty water, we take porter, or port wine, smell, taste, and colour, will in like manner disappear. This property is almost purely chemical.

c. The oxidising influence it appears to exercise upon the substances it absorbs. These substances, whether gaseous or solid, whether strongly smelling

or strongly colouring, as soon as they are laid hold of by the Charcoal, begin to unite with oxygen, to lose their characteristic properties, and to change into new chemical compounds. Ammonia for example, changes into nitric acid, sulphuretted hydrogen and sulphurous acid, into sulphuric acid, and so on. This action is purely chemical. But the Charcoal does not *pro*duce, it only *in*duces it. It condenses these gases within its pores, and when brought in contact in this condensed state, they act upon each other so as to produce nitric, or sulphuric acids. Thus N. being Nitrogen, H. Hydrogen, and O. Oxygen.

	N.	H.	O.			N.	H.	O.
1 of Ammonia	1	3	0	to form	1 of Nitric Acid ...	1	0	5
unites with					and			
8 of Oxygen	0	0	8		3 of Water	0	3	3
Sum..	1	3	8		Sum..	1	3	8

and S. representing Sulphur

	S.	H.	O.			S.	H.	O.
1 of Sulph. Hydrogen	1	1	0	to form	1 of Sulphuric Acid	1	0	3
unites with					and			
4 of Oxygen	0	0	4		1 of Water	0	1	1
Sum..	1	1	4		Sum..	1	1	4

In like manner solid substances change, and the smell removing influence of Charcoal ceases when its pores become filled with the new and fully oxidised compound thus produced."

The following table, by Monsieur Theodore de Saussure, exhibits the amount of gas absorbed by a single volume of Charcoal:—

Ammonia	90	Bicarburetted Hydrogen...	35
Hydrochloric Acid	85	Carbonic Oxide	94
Sulphurous Acid	65	Oxygen	92
Sulphuretted Hydrogen...	55	Nitrogen	75
Nitrous Oxide	40	Carburetted Hydrogen	5
Carbonic Oxide	35	Hydrogen	17

The absorption of these gases is generally complete in a few hours.

All kinds of Charcoal are absorbent of noxious gases and they possess oxidising powers in proportion to their purity, but wood, peat, and the mineral Charcoal obtained by the calcination of the Boghead coal, or as it is sometimes termed, the Torbane mineral, are the principal that are made use of for deodorising or disinfecting purposes, while they possess the great advantage of being obtainable at a very moderate cost. A combination of these three products, or at any rate of peat and wood Charcoal, appear to answer better than either kind does separately. Dr. Stenhouse and Dr. Forbes Watson, are applying these singular and valuable properties of Charcoal to some highly useful and important purposes connected with health in the form of respirators for individual use, and as filters adapted for the ventilation of dwellings and large buildings, and for supplying a pure filtrated air for the use of large assemblies of persons within. The ingenious apparatus constructed for these purposes, under the direction of those gentlemen, may be witnessed in operation at the Polytechnic institution.

The dissecting rooms at St. Bartholomew's and St. Mary's Hospitals, which at all times are liable to abound in noxious cases and putrescent odours, are now purified by this substance and are rendered perfectly sweet and endurable. Placed in shallow vessels about the rooms it acted so promptly that in ten minutes not the least diffused smell could be detected, and so quick and effectual was its operation, that arrangements are made for its constant use; and we have no

doubt that this method of correcting foul odours and of improving the deteriorated atmosphere of rooms, will be generally adopted in all dwelling houses.

While the powerfully deodorising properties of Charcoal have been appreciated and acted upon by all persons engaged in sanitary operations, some able and influential authorities have expressed doubts of its disinfecting powers.

Dr. Sutherland, the chief sanitary Commissioner in the Crimea, in a letter addressed to the Earl of Shaftesbury, and which letter appeared in the "Times" of August 22nd, 1855, makes the following statement in reference to the sanitary measures which have been adopted for the benefit of our gallant army in the Crimea, and he remarks particularly on this point:—

"We use three deodorising substances—charcoal, lime, and sand, or gravel; we have tried them all. Peat Charcoal acts extremely well, and in small quantities; it is, therefore, the best for certain purposes; as for instance, for deodorising in the trenches and in the camp, where carriage is an object; damp or wet immediately destroys its qualities. Lime acts very well, and I think best when wet; sand or gravel, for certain purposes, is as good as either. Dr. Paris first suggested it to me. A large quantity is required, and, therefore, its use is limited by carriage; we used it alone for the worst nuisances—namely, the horrible marsh at the head of the harbour of Balaklava; six inches of sand spread over it, entirely deodorised the soil.

Any of these substances would, I believe, act as disinfectants, if a proper quantity were used, or at least, I presume so; but I suspect that bulk has more to do with disinfection than chemical composition:

peat Charcoal in any ordinary quantity is certainly not a disinfectant, it stops smells, and that is all. I give you the following conclusive experiment—The steam ship "*Chester*" arrived here several weeks ago laden with Charcoal: she lay some weeks in the harbour, close to the wharf, and not far from large accumulations of foul matter which had been covered up. She began to discharge her cargo in sacks, which were piled up close to her stern, so as to form a lofty wall, on the quay. The surface of the quay was covered with charcoal dust, the same dust pervaded the ship, and covered the men; so perfect was the deodorising effect, that there was no smell either in the ship or near it, although usually the air was very foul there. In two days, six cases of cholera appeared on board, of which five died. We sent the ship outside at once. There were five subsequent cases of diarrhœa, but all recovered: a ship lying next to the "*Chester*," had no disease.

The fact is certain and curious, and is confirmed, though not in so striking a manner by all our experience here. It would, I think, be safe to disuse the word 'disinfectant,' because it leads to undue expectations, and might lead to neglect of other measures."

To these remarks of Dr. Sutherland, the following extract from the Pharmaceutical journal affords, we think, a correct and conclusive explanation:

"It is certainly a very important question to be determined, whether, and in what way, or to what extent, the offensive odour of decomposing organic matter is connected with infection. We agree with Dr. Sutherland, that the terms deodoriser and disinfectant ought not to be commonly used in connexion, as if the one effect necessarily followed the other. In fact, we know very little about infection, its real

nature, and the *modus operandi* of those substances which have been found, or supposed to prevent contagion. It is generally considered that the poison of contagion is destroyed by a process of oxidation—a process similar to that by which offensive odours are usually got rid of. Admitting this, however, it does not follow that the two effects should be necessarily simultaneous.

Charcoal and lime are two of the best known substances for preventing the escape of offensive odours from decomposing organic bodies; but these two substances do not act in precisely the same way. The action of the charcoal in as far as the charcoal is itself concerned, is mechanical, that is to say, the charcoal does not enter into chemical combination with any of the elements present. On the other hand, the lime combines with some of the products of decomposition. But the sure, most active and efficient agent in destroying offensive odours, and also, as is assumed and generally believed, in destroying contagion, is atmospheric oxygen. Charcoal possesses the property, in a very high degree, of condensing gases upon its surface; and it is thus capable of bringing large quantities of atmospheric oxygen, in an active state, into contact with the noxious products of organic decompositions, and causing their destruction by an oxidising action. The action of sand or gravel would be somewhat similar to that of Charcoal, but with this difference, that sand or gravel are deficient in that property which so remarkably distinguishes Charcoal, of condensing gases on their surface. The sand or gravel acts simply as a porous mass, the interstices of which are filled with air; and the gaseous products of decomposition on passing through the mass, are minutely divided, and brought into intimate contact with atmospheric oxygen. Dr. Sutherland says, that a stratum of six inches thick of sand, placed over ground filled with decomposing

bodies, entirely deodorised the soil. In this case, we have no doubt, the action of the sand was such as we have described."

Poisonous influence upon living animals is always proportionate to its degree of concentration—a resident within the limits of the Pontine marshes, would be much more liable to be affected by its malaria, than one whose habitation was some distance removed from them—constitution, temperament, and other conditions being similar in both individuals. A healthy person coming in contact with another individual afflicted with cholera, would be far less likely to imbibe the disease, than he would be if his intercourse extended to one hundred so circumstanced. Again, one patient in typhus fever or small pox, confined to a small ill-ventilated room with little regard to cleanliness as respects raiment or bedding, would generate by concentration, a poison sufficiently virulent to infect every person who entered his room; while a hundred persons similarly diseased, in a large airy well ventilated apartment, where cleanliness and other proper sanitary measures were duly attended to, might be visited with absolute impunity. Erisypelas, or gangrene, or fever, breaks out in one of the wards of a hospital, or union, or barrack, and all former experience has demonstrated that unless the case be immediately removed and isolated from other invalids, the disease rapidly extends from bed to bed, until first all the inmates of the ward and afterwards those in the whole building are attacked. Great mortality of course follows, and a

disease is engendered by concentration again of so virulent, pestilential, and contagious a character, as to render it a matter of the utmost difficulty to subdue or eradicate it. A minute dose of arsenic may be taken as a tonic with the greatest benefit in neuralgia and ague, but concentrate those minute doses by mixing a dozen doses together, and you produce by such concentration a virulent poison. Hence it is clear, that large dilution in every instance, is the most certain and effectual method of destroying all kinds of contaminating influence, whether existing as animal, vegetable, or mineral poisons, or even in that subtle and insidious gaseous form as it emanates from the decomposition of either of the before-named substances. The dejections of one dysenteric or choleraic person, left to putrify in the vicinity of a closely packed community of healthy persons, would be sure to do less mischief, than would result from the dejections of one hundred such invalids; and so would the sanitary condition of such congregated community be best promoted, were all the dejections removed, with as little delay as possible, from the vicinity of the spot, upon which they are obliged to dwell. Cotton, wool, sand, ashes, saw dust, earth, gravel, will all absorb the odours consequent upon decaying animal or vegetable matter; but they will retain them unchanged, and become fully saturated thereby; and as the poisons generated by the putrid action of animal and vegetable matter are also self-generating, this saturation becomes sooner or later completed, and emanations more poisonous, be-

cause more concentrated than those originally infused into the interstices of the cotton, wool, &c. in the first instance, are evolved again with fatal consequences. Not so with Charcoal; whatever gaseous matter passes within its pores, there it is decomposed by the oxygen distributed in such large quantities over its minutest particles; and it is satisfactory to know, that these noxious gases are never again liberated in a pernicious form, and that except in the one solitary instance, where Charcoal is burnt destructively in a room perfectly closed from all access to the atmosphere, no inconvenience can ever result from its use.

It must be obvious therefore, that early deodorising and disinfecting, and frequent and complete removal of all feculent matter from densely populated localities, is the primary and fundamental means of promoting health and of arresting the ravages of disease; and that without this, all other precautions are vain and ineffectual.

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