SHARON SPRINGS,

BY

S. F. FONDA, M. D.

[illegible] – 1860

ANALYSIS

OF

SHARON WATERS,

SCHOHARIE COUNTY;

ALSO OF

AVON, RICHFIELD, AND BEDFORD MINERAL WATERS.

WITH DIRECTIONS FOR INVALIDS.

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TO THE REV. DR. DUMONT.

Dear Sir:—

To no other friend can I inscribe this volume more cordially and appropriately than to yourself. It is due to you not only on account of the agreeable associations connecting your name with the subjects of which it treats, but as a token of gratitude for many acts of kindness.

Your much obliged and grateful friend,

S. F. FONDA.

ERRATA.

By an accidental omission, the items of the analysis of the Chalybeate Spring do not appear on page 41. They are as follows:—

One gallon contains :

	Grains.
Sulphate of Magnesia . . .	8·56
" Soda	1·00
" Lime	16·36
" Iron	86·00

Also, Section III. should be supplied on page 42.

PREFACE.

In the treatise now presented to the profession and the public, the author has endeavored to exhibit a view of the mineral waters of Sharon Springs. In so doing, it appeared necessary to enter into some detail on the anatomy and physiology of the human system, in order to give a clear exposition of the beneficial effects of bathing, and of the elimination of excrementitious substances from the blood. It is not expected that all the readers of the following pages will look upon their contents with equal interest, or derive from them an equal amount of information; but everything relating to the preservation of health by baths and auxiliary processes must be regarded as property common to all. The author hopes that his labors will be instrumental in promoting the frequent use of the bath; as he is convinced that if it once becomes general, it will be found not only to contribute greatly to individual comfort and pleasure, but also to promote the health of the community at large. It would be a step in the advance from physical to moral amelioration and progress.

SHARON SPRINGS.

GENERAL DESCRIPTION OF SHARON SPRINGS.*

When, over the wide-spread plain, the weary traveller sees rising into view the dim outlines of shade-producing trees, his spirits are enlivened, and his pace is quickened. But when the well defined forms have chased away all uncertainty, then the anticipated pleasures of refreshment and rest in the shade are scarcely inferior to the actual realization. And this pleasure is heightened into joy when the faint and thirsty wayfarer suddenly beholds crystal fountains forcing their sparkling waters from among the rocks beneath the far-spreading forest screens.

* For this introductory description of the Springs, the author is indebted to the kindness of Samuel Fleet, Esq., of New York City.

He drinks, and finds the waters restorative of long-lost health; and with a heart swelling with gratitude to the Giver of all Good, he gazes with delight over the beautiful, varied, and extended landscape.

Leaving the Delavan House at Albany, you step into the cars, cross the pine lands to Schenectady, and thence continue along the banks of the Mohawk to Palatine Bridge, a distance of fifty-three miles. You then take stage, and travel southerly, over country enlivened by well cultivated fields, and pleasantly broken into hills and deep water-worn ravines.

You approach the village of Sharon Springs by a romantic road, cut beside a highland ridge covered with dense and lofty forest. Below the road, and overshadowed by evergreen and deciduous trees, some of which are venerable for their age, runs a babbling stream. Passing over a bridge, by which is a mill protected and half concealed in the embrace of the trees, you ascend to the level of the main street. On the left, twelve hundred feet above the Hudson River, stands the Pavilion, with its columns and outbuildings. Some five or six other hotels, and some thirty or forty dwellings are on that street,

and constitute the main portion of the village. This street, parallel with the stream, winds over the elevated grounds at the foot of which issues the fountain. The stream runs along the base of the mountainous ridge lying west of the main street, covered with a forest that is universally admired, and possessing in a high degree the elements of venerableness and grandeur.

These woods afford extensive, varied, and pleasant walks. A few Indian families, who here take up their summer residences, impart to the scene a forest wildness of other days. They employ their time in making baskets, fans, and similar articles, which are sold to the visitors. The Indian boys display their expertness in shooting, with bow and arrow, at pennies that soon find their way to their pockets.

At the base of this ridge, streams of clear, sparkling, medicinal waters boil up and gush out of the soil and rocks, diffusing a sulphurous smell for some distance around. As they flow they deposit on the rocks their sulphurous and magnesian combinations, forming a light yellowish incrustation, and where arrested by dams they assume a milky blueness. The rocks, cropping out of the side and at the base of the ridge, appear to be sedimentary deposits of the waters.

If the waters pass over moss or other vegetable growths, they incrust every fibre, leaf, and branch, producing beautiful specimens of petrifaction.

These springs are within the very shade of the forest. Walks of easy and varied grades lead at once into the midst of the primitive and undisturbed wilds. The lover of nature may sit and luxuriate, now in the stillness and grandeur, and now in the roar and strength of the forest; or he may prolong his rambling, ascending the crooked cattle pathways until he reaches an elevated clearing, whence he can look down on the Pavilion, and enjoy a prospect as extended as it is delightful. Woods and cultivated fields join on to woods, fields, and orchards, until they are lost on the face of the distant mountains, which, rising in succession, blend their blueness with the clouds. The sight is cheering and healthful. How many ages have passed away in converting seemingly so large a portion of the stubborn forests of the earth into fruitful fields! Whence the giants that aided our fathers in labors so great!

Breaking away from the enchanting scene, and continuing on northerly through the woods, the visitor suddenly finds himself at the extreme

end of the mountain, and there, from an observatory not of human erection, is a scene that tasks all power of description. In addition to the easterly view, the eye looks away, north and west, over a chequered expanse that stretches far,—where the Adirondack mountains commune with the clouds, and where the motherly queen of the British Isles claims sovereignty. As the eye comes back it traces out the silvery course of the Mohawk,—the pathways of its successful competitors, the great Erie Canal and Central Railroad,—measures village with village, and marks with complacency the steeples rising here and there out of the rural neighborhoods. As the rambler sits feasting on the vision, the atmospheric agencies unite in adding new charms to the scene; the winds come with varied speed and power, and the trees and ripening fields gracefully wave their arms in deference and respectful gratitude; the shadows run over the landscape in pursuit of the clouds like pleasing dreams; the sun varies its silvering, gilding, and bronzing processes, ever trying the effects of streams of direct rays and volumes of reflected light and shade from clouds, and whether displeased with its attempts, or unwilling to translate the beholder from earth, it

brushes away its gilding, draws its curtains of clouds, and retires.

Descending from the highland, you may extend your walk along the confines of the great basin of farm lands, and return up the ravine, following a path beside a restless brook, overshadowed by dense foliage. Thence you may turn towards the east, and ascend the eminence on which stands the Pavilion Hotel, a large and imposing structure, commanding a prospect on which the eye, never tiring, travels over field after field, till the dividing lines are lost on the side of the distant mountains. For airiness from every point of the compass, for beauty, richness, and extent of rural scenery, this spacious summer retreat is surpassed by few from Maine to the Rocky Mountains.

Strolling to the east, you enter other beautiful woods, held sacred from the woodman's axe probably during the years of the independence of these United States. Continuing south for a mile you strike the turnpike road from Albany to the shores of Lake Erie, well known in the days of our fathers as the great western avenue of travel and trade. Its glory has departed. The canal and railroad have unhinged its toll-gates. The tens of thousands of fat cattle have

deserted it for the more easy, rapid, and modern mode of locomotion to the great slaughter-houses.

Wherever you direct your footsteps, you find variations in the scenery before and around you. In one minute you can leave the main street, and plunge into the solemn forest. When you have taken your draught of the health-giving waters, in a moment you may return to the social and gay circle, or gain a solitude among the lofty and venerable trees, whose leafy tops drink in all the rays the great sun can pour out. In a walk of a few minutes you may exchange a circumscribed vision for an extended and cheering landscape. In this respect there is a great contrast between Sharon and Saratoga. In the latter there is almost one level sameness. Art, however, has lent its aid, and here and there touched up the scene into the beautiful. To the former nature has been lavish of its rural gifts, but art has been dilatory and niggardly. With a moiety of the outlay expended at Saratoga, Sharon would be considered one of the most lovely and romantic spots in our whole country. Its capabilities are almost unlimited. A ride to Cherry Valley is buoyant and inspiring to the soul. Otsego Lake, embosomed among lovely hills, celebrated for its salmon-trout and other

fish, as excellent in flavor as its waters are pure, is further south, but within a morning's airing. Cooperstown, looking northerly, commands a view of its whole nine miles. In whatever direction you walk or ride you meet with sources of enjoyment. Howe's wonderful cave can be reached with comparatively little exertion.

This whole region of country comprised the frontier settlements during the Revolutionary war. Almost every rood of land has a tale of heroism, suffering, cruelty, and blood. A large volume of local thrilling incidents of the times that tried the souls of men can be found at the public houses.

Sharon Springs are in Schoharie county, near the lines of Montgomery and Otsego counties,— in a healthy, rich, agricultural region. Board can be had in private families at from three to eight dollars, and in hotels at from five to fifteen dollars per week. The hotels are spacious and airy, and are well conducted. The unfavorable circumstances in which much of the property of the village has been situated, are in a great degree removed. Its growth and prosperity will doubtless be commensurate with the increasing reputation of the waters. The number of visitors has for several years pressed on the accom-

modations, which, in 1853, were sufficient for upwards of seven hundred at a time. During the season, probably more than three thousand persons took board in the village. This influx of strangers affords a cash market for almost every article grown on the neighboring farms.

Although I had limited opportunities for information, yet from facts obtained from visitors, physicians, and others, I was much impressed with the preventive and restorative effects of the waters on the human system, in reference to many diseases. Since my return to New York city, I have found that there is scarcely any knowledge of the Springs; and that some physicians are not only unacquainted with the medicinal properties of the waters, but are even ignorant of the locality of Sharon.

THE OPERATION OF ELIMINATIVE MEDICINES.

Before entering upon the anatomy and physiology of the cutaneous system, I purpose to explain the operation of Eliminative Medicines, and also the beneficial effects of mineral waters.

The mode of operation of eliminative medicines is a matter of much importance, and its consideration will render necessary some inquiry into the character and functions of those important glandular organs which they are said to excite to action.

The rational explanation of the process of elimination, or secretion, has been, in all ages of science, a favorite topic with speculators and theorists,—sound or unsound in their views according to the light that was given to them. With regard to its essential nature, and its immediate bearing on the cure of disease, the subject has been generally understood with tolerable clearness. From the time of Hippocrates downwards, the use of evacuants, in the treatment

of fevers and other disorders, has been recognised, and their efficacy usually explained by supposing that they caused the passage out of the body, through the glands, of certain matters that were formed in the blood, but ought not to remain in it. This view was more particularly insisted on, towards the close of the seventeenth century, by Dr. Thomas Sydenham; and again, at the commencement of the eighteenth, by Dr. A. Pitcairn, in an essay on the use of evacuants in fevers. Both these writers had observed that fevers and other disorders had generally a tendency to pass off with an increase in one or more of the secretions; and they inferred from this, and from the results of their experience, that in stimulating and urging this secretion, the physician would be doing his best to promote a cure. More recently the same idea has been followed up by Cullen, Hamilton, and others. This theory is not in our immediate province. Though based upon reasonable grounds, it has perhaps been too universally applied. It will suffice now if we assume that remedies whose action is to increase the amount of secretion have often an important bearing on the cure of disease. We have only to inquire into their mode of operation.

As a preliminary step, there is one general law of secretion which it is of importance that we should clearly lay down, viz. it is the special object of each gland, or set of glands, tc secrete from the blood particular materials, and to expel them from the body. It follows from this law, that when any morbid substance or product, or anything which is in the system, but cannot naturally remain there, has to pass out, it prefers to pass by some glands rather than by others.

It must be remembered that the glands afford the only means by which a substance can make its exit from the blood; but we are still much in the dark as to the *rationale* of this force or action, by which particular matters are drawn towards each gland.

Dr. Pitcairn, a great man for the age in which he lived,—a man of original thought and natural genius,—gives us, in his essay on the circulation of the blood, a learned account of three theories on this subject, which were in vogue in his time. They are of importance as showing that the fact was then very clearly recognised, however uncertain the explanation of it may be. One party supposed that there was stored up in each gland a certain material which prevented

the passage through to itself of any dissimilar substance: just as when a sheet of paper is steeped in oil, oil only will pass through it, and not water. A second party, called the "chemical party," supposed that there must be, in the immediate neighborhood of each gland, a subtle fluid whose office it was to form and separate from the blood the materials which that gland was designed to secrete. A third set of physicians armed themselves with mathematics, and with the newly discovered principle of Newton, and actually worked out formulæ and equations to support their arguments. They had settled and perhaps reasonable ideas as to the definite shapes of atoms. They averred that each gland was to be compared to a sieve or strainer, having pores of a particular size, and of a certain geometrical shape, and that each secreted atom could only pass through a pore that exactly coincides in size and figure with itself.

The two former of these theories Dr. Pitcairn rejected with high disdain; the third he accepted in a modified form. He supposed that the vessels in the glands terminated in small open mouths, always circular, but differing in diameter in different glands, so that each would not admit the passage of a particle above a given

diameter. Thus he supposed that each secretion would consist only of certain peculiar particles. Possibly Dr. Pitcairn forgot that small particles would seldom hesitate to pass through large ducts.

We may perhaps feel inclined to ridicule these crude speculations of the philosophers of the eighteenth century; we may be disposed to smile at the idea of vessels with open mouths, and of glands which are riddled with holes, like the buckets of the Naiades; but we must confess, that if at the present day we have swept away these notions, we have certainly added nothing in their stead: nor can we explain this matter a whit more clearly than our predecessors a century and a half ago.

The fact nevertheless is plain, however vainly we may seek for the explanation. It is an established rule, to which there are few exceptions, that every substance which is formed in the blood and must be removed from the body, tends to pass out through some particular gland. Thus, it is the particular function of the kidneys to excrete water, urea, uric acid, and certain salts; of the bowels, to excrete effete matter and gases; and of the liver, to excrete fatty matters, tannin, cholesterine, and chlorate of soda.

Water, being the necessary solvent of the solid matters in all the fluid secretions, is secreted, in greater or less quantity, by all the important glands. The kidneys are the chief emunctories of water,—*i. e.* it is their province to separate it from the blood when it has entered in an unnatural amount. But in the excretion of water there exists a compensating relation between the skin, kidneys, and bowels, and particularly between the two former; so that when it is not properly excreted by the kidneys, it may pass out by the skin and conversely. It is well known that this change may be determined by several circumstances, particularly by the conditions of heat and cold, or moisture and dryness. The relation between the functions of the skin and kidneys applies also to other fluid and solid substances, as will be seen when we consider the medicines which act upon these glands.

Now this law of selective secretion applies not only, as it seems to me, to substances which, in the course of nature, are formed in the blood, and require to be excreted from it, but also to other matters, which have been, as it were, accidentally introduced from without, and which cannot properly remain in the system. Thus it would apply to all medicinal bodies which have

passed from the stomach into the blood, and which, not being natural constituents of that fluid, must be removed.

By way of summary, the preceding observations may be resolved into the following propositions:—

1. That eliminatives are medicines which enter into the blood.

2. That they cannot remain there, but must pass out of the body.

3. That in so doing they have a tendency to pass out by particular glands.

4. That the result of their passage through a gland is to increase its secretion.

5. That they are of use when the state of the system requires that the function of a gland should be restored or promoted.

What I wish to prove is, that a medicine increases secretion simply by being itself secreted; that while passing through a gland it stimulates the secreting cells, and rouses them to a proper performance of their natural functions; that every eliminative medicine has a tendency towards a particular gland, and increases the secretion of that gland; that thus, as far as our information on the subject extends, we find that cathartics are excreted from the blood by the

glands of the bowels, and pass out with the fæces; that diuretics are to be discovered in the urine, diaphoretics in the sweat, and volatile expectorants may be detected in the odor of the breath.

Any material which is naturally eliminated would act as an eliminative medicine. Thus, if a drachm of urea be dissolved in water, and injected into the veins of a dog, it causes copious urination, which continues until the whole is excreted. This well illustrates the argument.

Further, we find that when an eliminative medicine is diverted from the gland by which it usually passes out, it no longer augments the secretion of that gland. Dr. Ward gives an interesting case of a woman who was never purged by castor oil, but in whom the oil exuded from the skin, and acted as a diaphoretic. And it is, as I have said, well known that the conditions of cold and exercise will cause a diaphoretic, in most cases, to act on the kidneys, because it is then excreted by them. For the same reason, warmth, confinement, and rest will induce a diuretic medicine to act on the skin.

Now, if it be shown on the one hand, that eliminative medicines themselves pass through the glands whose secretions they augment; and

on the other hand, that when they do not pass through them, they do not, as a general rule, augment their secretion, it may fairly be presumed that they operate by so passing through.

I assert then, that medicines which stimulate secretions are themselves secreted. But the converse of this,—*i. e.* that all medicines which are secreted at the same time increase secretion,—though it holds good in the main, is not invariably true. There are two chief exceptions to it: these are astringents and hyperemics. When an astringent passes through a gland, it tends, by its natural force, to check secretion, and to cause constriction of the ducts. Thus, uva ursi may reduce the amount of the urine, although it sometimes increases it, in which case the eliminative may be said to overpower the astringent tendency. So also catechu, kino, and sulphuric acid diminish the secretion of the intestinal glands. But general astringents are not always glandular astringents ; thus, the mineral acids act as diuretics.

By hyperemics, I mean medicines which produce congestion. Powerful eliminatives do this when given in excess, simply by exciting immediate action. Now, it is a general rule that congestion, however caused, diminishes the se-

cretion of a gland. Thus congestion of the liver produces jaundice; congestion of the kidney, ischuria. After scarlatina, when the kidneys are suddenly called upon to eliminate a morbid material from the blood, congestion of the glands may be caused, the urine is diminished, and dropsy results.

Cantharides and turpentine are diuretics. They increase the urine when taken in moderate doses; but an overdose will diminish it, and may cause painful strangury, with an almost total suppression of the secretion. The explanation of such a result is obvious. Congestion is caused by the excessive action. In the same way, we find that a large dose of mercury, naturally a cholagogue, may produce jaundice by causing congestion of the liver. This fact has been observed by Dr. Graves, of Dublin.

In all cases, then, in which observations have been made, we find that an eliminative medicine is secreted by the gland which is stimulated by it; and in most cases, that a medicine which is excreted by a gland tends to increase its particular secretion.

II.

MINERAL SPRINGS.

ANALYSIS, HISTORY, MEDICINAL EFFECTS.

After the preceding general statement of the case, we are prepared to direct our attention to the Mineral Springs at Sharon. And first, of the analysis; secondly, of the medicinal effects of each substance.

SHARON WHITE SULPHUR SPRING.

Analysis by Dr. J. R. Chilton.

One gallon contains,

Sulphate of magnesia,	42.40	grains.
Sulphate of lime,	111.62	"
Chloride of sodium,	2.24	"
Chloride of magnesia,	2.40	"
Hydro-sulphuret of sodium, and hydro-sulphuret of calcium,	2.28	"
Solid contents,	160.94	grains.
Sulphureted hydrogen gas,	16	inches.

SHARON MAGNESIA SPRING.

By Prof. Lawrence Reed, of New York.

Bicarb. magnesia,	30.5	grains.
Sulphate of magnesia,	22.7	"
Sulphate of lime,	76.	"
Hydro-sulphurets of magnesia and lime,	0.50	"
Chlorides of sodium and magnesia,	3.	"
Solid contents,	132.7	grains.
Sulphureted hydrogen,	3.3	inches.

Mineral waters have been known to mankind from the most remote periods of antiquity. They were employed medicinally, both as external and internal agents, for the prevention, alleviation, and cure of diseases. Homer speaks of tepid and cold springs. The Asclepiadæ, or followers of Æsculapius, erected their temples in the neighborhood of mineral and thermal waters. Hippocrates speaks of mineral waters, though he does not prescribe them when treating of particular diseases. Pliny also notices their medicinal properties.

The principal source of mineral waters is the atmosphere, from which water is obtained in the form of rain, snow, hail, and dew, and which, after percolating a certain portion of the earth,

and dissolving various substances in its passage, re-appears on the surface, at the bottom of declivities—spring water. But springs are sometimes observed under circumstances which are inconsistent with the supposition of their atmospheric origin. The boiling springs, which well up on the verge of perpetual snows, at an altitude of 13,000 above the level of the sea, as in the Himalayahs, cannot be derived from the atmosphere; neither can the Icelandic Geysers have an atmospheric origin. Other sources, therefore, have been sought for, and the writer last referred to enumerates three, viz. the focus of volcanic activity, the great mass of the ocean or other masses of salt water, and subterranean reservoirs.

Considered with reference to their temperature, mineral waters are divided into cold and hot. The hot or thermal waters are those which possess a temperature more or less elevated above the mean of the latitude or elevation at which they are found, and the changes of which, if any, observe no regular periods coincident with the revolutions of the seasons. Three causes have been assigned as the source of the heat of mineral waters, viz. volcanic action now in existence; volcanic action now extinguished, but the effects

of which still remain; and a central source of heat which increases as we descend from the surface to the interior of the earth. The origin of the saline and other constituents is another interesting topic of inquiry connected with the natural history of mineral springs. As water, in its passage through the different strata of the earth, must come in contact with various substances which are soluble in it, we refer certain constituents of mineral waters to solution and lixiviation merely,—as chloride of sodium, carbonates of lime and magnesia, iodides and bromides of sodium and magnesium, iron, silica, &c. Chemical action must, in some cases, be the source of other constituents. Thus, sulphureted hydrogen is probably produced by the action of water on some metallic sulphuret (especially iron pyrites); sulphurous or sulphuric acid, from the oxidation and combustion of sulphur, free or combined.

Classification.—Mineral waters may be arranged according to their temperature, their chemical composition, or their medicinal properties. But hitherto no satisfactory classification has been made by any of these methods, nor perhaps can it be effected.

We will now consider the individual medici-

nal substances contained in the White Sulphur Spring of Sharon, premising some observations on sulphurous waters in general.

These waters are impregnated with hydro-sulphuric acid (sulphureted hydrogen), in consequence of which they have the odor of decayed eggs, and cause black precipitates (metallic sulphurets) with solutions of the salts of lead, silver, copper, bismuth, &c. Those sulphurous waters, which, after ebullition, retain their power of causing these precipitates, contain in solution a sulphuret (hydro-sulphuret), usually calcium or sodium, which is the case with sulphur water at Sharon.

All the British sulphurous waters are cold, but some of the continental ones are thermal. The most celebrated sulphurous waters of England are those of Harrowgate; of Scotland, those of Moffat and Rothsay.

Dr. Pereira observes: "The general operation of the sulphurous waters is stimulant, and is adapted for chronic complaints. They are supposed to possess a specific power over the cutaneous and uterine systems. They are employed both as external and internal agents in chronic skin diseases (as lepra, psoriasis, scabies, pityriasis, herpes, &c.), in derangements of the

uterine functions (amenorrhœa and chlorosis), in old syphilitic cases, in chronic rheumatism and gout, and in other diseases in which sulphur and its compounds have been found serviceable. On account of their stimulant effects, they are contra-indicated in all plethoric and inflammatory conditions of the system, and their employment requires caution, especially in weak and irritable constitutions."

1. Let us now advert to the physiological effects of the medicinal agents contained in Sharon sulphur water. And as sulphate of magnesia stands at the head of the list in the analysis, I shall examine its physiological effects first, which, by the by, is all I design to do at this time.

In moderate doses, sulphate of magnesia is a mild and perfectly safe antiphlogistic purgative, which promotes the secretions as well as the peristaltic motion of the alimentary canal. It is very similar in its operation to sulphate of soda, and is less likely to nauseate or otherwise disorder the digestive functions, while it acts somewhat more speedily on the bowels. It does not occasion nausea and griping, like some of the vegetable purgatives, nor has it any tendency to give rise to febrile disorder or inflammatory symp-

toms; but, on the other hand, it has a refrigerant influence,—hence it is commonly termed a cooling powder. In small doses, largely diluted with aqueous fluids, it becomes absorbed, and slightly promotes the action of other emunctories. Thus, if the skin be kept cool, and moderate exercise be taken, it acts as a diuretic. To state all the cases in which it is administered would be to enumerate nearly the whole catalogue of known diseases.

2. The sulphate of lime, the second ingredient in the analysis, has no effect upon the animal economy unless it is absorbed by the veins of the stomach before it is precipitated from the other substances which cause it to be held in solution. I have reason to believe, that as soon as the temperature of the water is raised by the stomach, the sulphate of lime is precipitated, and passes down with the fæcal matter, producing no effect whatever. Many persons have an idea that the sulphate of lime has an injurious effect on the kidneys and urinary organs, but I can assure them that this supposition is entirely fallacious.

2. Chloride of sodium, or common salt, the third ingredient, serves some essential ends in the animal economy. It is employed on account of its agreeable taste by the most refined

as well as the most barbarous nations; but the qnantity taken varies with different individuals. It is an invariable constituent of the healthy blood. Dr. Stevens has shown that in certain states of disease (as cholera) there is a deficiency of the saline matter in the blood, which in those cases has a very dark or black appearance. Some of the characters of the sanguineous fluid, such as its fluidity, its stimulating qualities, and its conservative properties, are probably more or less connected with its saline constituents. The chloride of sodium found in some of the secretions, as the bile and tears, doubtless serves some important purpose. It is said that persons who take little or no salt with their food are very subject to intestinal worms. Lord Somerville, in his address to the Board of Agriculture, states that the ancient laws of Holland ordered a diet of bread alone, unmixed with salt, as the severest punishment that could be inflicted upon criminals in their moist climate. The effect was horrible. These wretched victims are said to have been devoured by worms engendered in their stomachs. Mr. Marshall tells us of a lady who had a natural aversion to salt: she was most dreadfully affected with worms during the whole of her life.

In some diseases the moderate use of salt has the effects of a tonic. It acts as a stimulant to the mucous membranes, the absorbent vessels and glands. In its endosmotic action on the tissues and on the blood-corpuscles, common salt agrees with other saline substances before mentioned.

Hydro-Sulphuret of Calcium and Hydro-Sulphuret of Sodium.—Sulphur, sulphureted hydrogen, and the alkaline sulphurets produce similar effects. By the inhalation of sulphureted hydrogen gas, or the vapor of hydrosulphuret of ammonia, as well as by the ingestion of the alkaline sulphurets, the blood assumes a dark color,—an effect which, in the case of sulphureted hydrogen, Liebig ascribes to the action of this gas on the iron in the blood. When the alkaline sulphurets are swallowed, a portion suffers decomposition by the acids of the stomach, and consequently an evolution of sulphureted hydrogen takes place. The undecomposed portion is absorbed and eliminated by the kidneys; but during its passage through the system a certain quantity undergoes oxidation, and is converted into a sulphate. Sulphur taken into the stomach is, for the most part, evacuated by the bowels; but

some portion is absorbed, and may be detected in the secretions. In the urine it is found as sulphate and sulphuret. It is probable, therefore, that by the mutual action of sulphur and the soda of the bile, sulphuret of sodium and sulphate of sodium are formed, and that these are subsequently absorbed. The different preparations of sulphur, when employed medicinally, promote the action of the secreting organs, their influence being directed principally to the skin and mucous membranes. They have been supposed to possess a specific stimulating influence over the pelvic venous system. Their influence over the skin is undoubted, and their efficacy in chronic cutaneous diseases has long been established.

SHARON MAGNESIA SPRING.

Bicarbonate of Magnesia—Physiological Effects.—When taken internally, magnesia neutralizes the free acids contained in the stomach and intestines, and forms therewith soluble magnesian salts. In full doses it acts as a laxative; but as it occasions very little serous discharge, Dr. Paris ranks it among purgatives which urge the bowels to evacuate their contents by an

imperceptible action upon the muscular fibres. Part of its laxative effect probably depends on the action of the soluble magnesian salts, which it forms by union with the acids of the alimentary canal. Magnesia exercises an influence over the urine analogous to that of the alkalies; that is, it diminishes the quantity of uric acid in the urine, and when continued for too long a period occasions the deposit of earthy phosphates in the form of white sand. On account of its greater insolubility it requires a longer time to produce these effects than the alkalies. As an antacid it is as efficacious as the alkalies, while it has an advantage over them in being less irritant and not caustic, and therefore is not apt to disorder the digestive organs. Hence it is administered to relieve heartburn arising from, or connected with, the secretion of an abnormal quantity of acid by the stomach. Its efficacy is best seen in persons of a gouty or rheumatic diathesis, in which the urine contains excess of uric acid. It often relieves the headache to which such individuals are not unfrequently subject. It is most efficacious in diminishing the quantity of uric acid in the urine in calculous complaints; and, according to Mr. W. T. Brande, it is sometimes effectual where the

alkalies have failed. It will be found of great value in those urinary affections in which alkaline remedies are indicated, but in which potash and soda have given rise to dyspeptic symptoms.

The Magnesia water owes its cathartic properties to the bicarbonate of magnesia combined with the sulphate of magnesia, which renders the Magnesia water more laxative than the Sulphur water. Whilst the Magnesia water is more laxative, and better adapted to acute diseases requiring antiphlogistic remedies, the Sulphur water is stimulating and alterative, and hence more serviceable in chronic diseases.

As the other ingredients in the Magnesia water have been described when speaking of the medicinal ingredients contained in the Sulphur water, I shall say nothing more concerning them under this head.

CHALYBEATE SPRING.

Situated upon the property of LEROY ELDREDGE, the proprietor of the Union Hall.

This spring has been recently discovered, and has been properly curbed by the intelligent and accommodating proprietor.

Analysis.—Sulphate of magnesia.
Sulphate of soda.
Sulphate of lime.
Sulphate of iron.

The use of chalybeate waters is indicated in cases of debility, especially when accompanied by that condition of the system known as anemia. They have long obtained a high celebrity for the relief of complaints peculiar to the female sex. Their employment is contra-indicated in plethoric, inflammatory, and febrile conditions of the system. Iron exists naturally in the hematosin, or coloring matter of the blood. It has been maintained by some that the red color of hematosin does not depend upon the iron which it contains. Without iron, hematosin could not exist, any more than albumen could continue to be albumen when deprived of nitrogen.

In a case which came under my own observation, the blood of an anemic girl was found, before the use of iron, to contain only 50 parts of globules in 1000, instead of 120, the normal average. The ammonio-citrate of iron was prescribed, in five doses, three times a day. After it had been continued for a month, the blood was again analysed, and the amount of cor-

puscles found to have increased to 76 parts. After another month they had reached 100.

When treating of eliminatives, I spoke of the cutaneous system, and intimated my intention of considering the anatomy and physiology of the skin before coming to the subject of baths. I propose now briefly to describe the skin and its functions.

Anatomical Divisions of the Skin.—The skin consists of two main layers,—the external, called epidermis, cuticle, or scarf skin; and the internal, called cutis vera, or true skin, which contains the perspiratory and sebaceous or oil-secreting glands.

The True Skin.—The dermis, or true skin, consists of a dense elastic tissue, with numerous openings for the transmission of blood-vessels from its under surface, and of an intricate network of minute blood-vessels, sensory nerves, and lymphatic or absorbent vessels distributed over its upper surface. This network is sometimes called the papillary layer. The dermis also contains in its substance the sebaceous follicles, and transmits the ducts of the sudoriferous or sweat glands that lie beneath it. The papillary layer of the dermis consists of minute

conical prominences, very irregularly distributed. The papillæ are sometimes collected into masses, and arranged in parallel rows, giving rise to the ridges and furrows seen upon the palm of the hand and sole of the foot. The dermis, or true skin, varies in thickness in different parts of the body, being most dense on the back, outer sides of the limbs, palms of the hands, and soles of the feet; and contrasting, in this particular, with the inner side of the limbs, the breast, and the back of the hands, and the eyelids. The thickness in these cases sometimes arises from the dense substratum of the true skin, or corion proper, and sometimes, as where great delicacy of touch and sensation is required, from increase of the substance of the papillæ themselves. Of the profuse supply of blood to the true skin, by the interweaving of innumerable fine blood-vessels or capillaries, and of the nervous tissue on which sensitive impressions are made, we can form an idea from the fact, that in no part of the surface can the point of the finest needle penetrate without blood being drawn, and pain felt.

The Epidermis or Cuticle.—The external layer of the skin, called epidermis or cuticle, is formed by the exudation of cells from the papillary layer,

which is at first soft, but afterwards becomes hard and horny in its texture, and disposed in a scaly or imbricated form. It consists of several laminæ, the outer of which exhibit the usual characteristic features of the epidermis, being hard and unorganized; while the inner, or those in contact with the papillary layer, are soft and cellular. The latter was for a long time described as a separate layer, and was called the rete mucosum, and considered as the seat of the color of the skin. It is now ascertained, however, that the pigment cells are scattered through the ordinary epidermic cells in the under laminæ of the epidermis, and contiguous to the papillary layer of the dermis. On the presence of this pigment in the cells of the epidermis depend the different tints of color of the skin, observable in different races and nations. Owing to the peculiar texture of the epidermis, its superficial laminæ are continually removed by attrition, and new ones are as continually formed on its internal surface. This outer layer of the skin is accurately modelled on the papillary layer, and each papilla has its appropriate sheath in the newly-formed epidermis.

The epidermis is pierced by the excretory ducts of the sweat glands and sebaceous folli-

cles, which, as already remarked, lie in the true skin, and immediately beneath it, and also by the shafts of the hair. The number of its laminæ is increased, or in other words it becomes thicker, in proportion as the surface is rubbed and exposed to pressure, by which the true skin is excited to increased secretion in order to protect the parts most subjected to attrition and pressure,—as the soles of the feet and palms of the hands. It is thinnest on the tips of the fingers and on the lips,—parts in which sensibility is required. The obvious use of the epidermis is to protect the true skin, which is extremely sensitive to impressions from foreign bodies or extremes of temperature. Of this every one has had experience in cases where the epidermis has been accidentally peeled off, or removed by disease or by a blister. As normally constituted, it allows of a closer contact with the substance to be examined, by a greater pressure and firmer grasp and diversified handling, so that a more definite perception of its properties is obtained without any sensation of pain.

The Sudoriferous or Sweat Glands.—The sudoriferous, or perspiratory, or sweat glands are small, oblong, rounded bodies, in some cases

sacs, situated on the tissue beneath the skin. Under the microscope these bodies present the appearance of a solitary tube intricately coiled, one end of which is closed and usually buried within the gland, the other emerges from the gland and opens on the skin. The outer end passes through the dermis, and opens obliquely by a pore upon the surface of the epidermis, or scarf skin, so that the orifice is covered by a minute valve of this outer layer of the skin. The convoluted tube of which the gland consists, forms a kind of knot; it is copiously supplied with blood-vessels, and lined by a prolongation of the epidermis. The pores are visible to the naked eye upon the palm of the hand, the sole of the foot, and the extremities of the fingers. They are ranged along the little ridges of sensory papillæ, and give to the latter the appearance of being crossed by transverse lines.

Perspiration, and Extent of the Perspiratory Tubes.—From these glands the watery and saline fluid of perspiration is constantly secreted. The following minute estimates by Mr. Wilson, in his Practical Treatise on Healthy Skin, are curious and interesting:—

"Taken separately, the little perspiratory tube, with its appended gland, is calculated to awaken

in the mind very little idea of the importance of the system to which it belongs; but when the vast numbers of similar organs composing this system are considered, we are led to form some notion, however imperfect, of their probable influence on the health and comfort of the individual. I use the words 'imperfect notion' advisedly; for the reality surpasses imagination, and almost belief. To arrive at something like an estimate of the value of the perspiratory system, in relation to the rest of the organism, I counted the perspiratory pores on the palm of the hand, and found 3,528 in a square inch. Now, each of these pores being the aperture of a little tube of about a quarter of an inch long, it follows that in a square inch of skin on the palm of the hand, there exists a length of tube equal to 882 inches, or 73½ feet. Surely such an amount of drainage as 73 feet in every square inch of skin, assuming this to be the average for the whole body, is something wonderful; and the thought naturally intrudes itself,—What if this drainage were obstructed? Could we need a stronger argument for enforcing the necessity of attention to the skin?

"On the pulps of the fingers, where the ridges of the sensitive layer of the true skin are some-

what finer than on the palm of the hand, the number of pores on a square inch a little exceeded that of the palm; and on the heel, where the ridges are coarser, the number of pores on the square inch was 2,268, and the length of tube 567 inches, or 47 feet. To obtain an estimate of the length of tube of the perspiratory system of the whole surface of the body, I think that 2,800 might be taken as a fair average of the number of pores in the square inch; and 700 consequently as the number of inches in length. Now, the number of square inches of surface in a man of ordinary height and bulk is 2,500; the number of pores, therefore, 7,000,000; and the number of inches of perspiratory tube, 1,750,000,—that is, 145,833 feet, or 48,600 yards, or nearly 28 miles."

Sebaceous or Oil-Forming Glands.—The sebaceous or oil-forming glands, which are included in the above calculation of Mr. Wilson, are small, oblong bodies, closely resembling the perspiratory glands; and sometimes they are short, straight follicles or pouches, seated in the substance of the dermis. Their excretory or terminal ducts open, in the largest numbers, in a hair follicle. In the hairy parts of the skin, we usually find a pair of sebaceous follicles open-

ing into the passage through which every hair ascends. In general the sebaceous tubes are straighter and wider than the perspiratory ones. They are absent in the palm and sole, but abound in the face and nose, the head, the ears, the borders of the eyelids, the armpits, and the natural outlets of the body, &c. The purpose of the sebaceous secretion is to keep the skin soft and pliable, and to prevent its being dried and cracked by the influence of the sun and air, and also to protect parts much exposed to friction. This oily fluid is much more abundantly formed in the races of mankind that live in warm climates than in those that inhabit cold ones. Its presence on the skin causes the water, when a person is bathing, to form itself into separate drops or globules on the surface of the body; and it imparts also a certain degree of greasiness to a garment that has been worn for a length of time next the skin.

The sebaceous tubes are frequently the seat of a curious parasite or animalcule (Entozoon folliculorum), which Mr. Wilson represents to be present in great numbers on the inhabitants of cities and large towns, whose skin is more or less torpid in its functions. He has found it in all periods, from youth to old age; more numerously,

it is true, in the latter than in the former period, and in great and remarkable numbers during sickness. He is disposed to regard it as answering a salutary purpose, by helping to keep open the over-distended cells and tubes, which, in the persons referred to, become impacted with hardened sebaceous matter, and which are in this way irritated and sometimes inflamed.

FUNCTIONS OF THE SKIN.

1. *Continuity of the Skin with the Mucous Membranes.*—In order to be able to appreciate fully the nature and importance of the functions of the skin, we ought to be aware that it is continuous with the membranes which line the internal cavities of the body, on and through which the functions of digestion, respiration, and nutritive absorption are performed. These membranes are called *mucous* on account of the secretion of the mucous fluid by which they are lubricated. One division, after lining the mouth, passes down and lines the stomach and the whole tract of the intestinal canal, giving out prolongations in its course to the excretory ducts of the liver and pancreas, as, in the mouth, it had done to the excretory ducts of the glands which fur-

nish saliva. Another division passes from the nose and back part of the throat into the windpipe, and thence into the cavities of the lungs, to which it gives a lining as far as their minutest divisions. The system of the mucous membranes, or the mucous system as it is generally called, is not only directly continuous with the skin at the various orifices, mouth, nose, &c., but it also resembles the latter closely in structure, consisting of an investing membrane (Epithelium), analogous to the epidermis externally, and of a reticulated tissue of blood-vessels, nerves, and follicles, bound up in areolar tissue, and resting on a denser tissue of the same nature as the areolar, which takes the place of the corion of the skin. Another but smaller division of mucous membranes lines the urinary and genital organs, and is, like the other divisions of the mucous system, continuous with the skin, which it also resembles in structure, and with which it has a close sympathy both in health and disease.

Absorption by the Skin.—The skin is, moreover, an apparatus for the performance of the functions of absorption (by which various substances, gaseous, fluid, and solid, are introduced into the body), and also of those of secretion and exhalation, by which various matters are elimi-

nated, either for special uses, or because their retention would be prejudicial to health. In virtue of its first or absorbent function, it becomes an organ of supply for the wants of the animal economy: and in this way it allows of the entrance of oxygen gas, and of water, and of numerous saline substances when they are held in solution by water. Nitrogen gas and carbonic acid are also absorbed by the skin. Most of the articles, indeed, of the materia medica may be introduced in this way into the blood, and produce their distinctive effects on the different organs in the same manner, although with not so much certainty of operation, as if they had been taken into the stomach. In certain cases, as of sailors in open boats, when fresh water cannot be procured, the pangs of thirst have been assuaged by keeping the skin wet with sea water. In other cases, in which, owing to obstruction by disease, as in the instance related by Dr. Currie, the patient was unable to swallow, the emaciation has been arrested and the thirst removed by the use of nutritive clysters, and prolonged immersion in a tepid bath of milk and water. Immersion in the warm bath causes both cutaneous absorption as well as exhalation from the skin; but as, notwithstanding

the loss by the double exhalation, the weight of the body is increased by the bath, there must be a real gain by absorption. The hard and scaly epidermis, or cuticle, retards the introduction of fluid into the general system; but after a while it is permeated by the latter, as in the instance of the feet being soaked in warm water, when the thick cuticle of the sole becomes whitened and opaque, and allows a quantity of fluid to exude if pressure be then made upon it.

A further example of nutritive absorption by the skin is exhibited by the experiment of tying a bandage round the hind leg of a puppy, and then keeping the limb for twenty-four hours in tepid milk. At the expiration of this time the lymphatic vessels are found full of milk. I do not deem it necessary in this place to inquire into the relative parts performed by the veins and lymphatics respectively in the function of cutaneous absorption. Frogs, whose skins are thin, and lizards, which have a cuticle thicker than that of man, after having lost weight by being kept for some time in a dry atmosphere, are found to recover both their weight and plumpness very rapidly when immersed in water. An immersion of even a part of the body will be followed by the absorption of the water,

and its distribution throughout the entire system.

Endermic Medication.—When the epidermis is raised by a blister or by hot water, and the true skin or dermis is exposed, substances applied to the surface of the latter are readily absorbed. Advantage has been taken of this fact by the introduction, in this way, of various medicines into the general system, constituting what is called endermic medication. This method is especially useful when, owing to mechanical obstruction, the medicine cannot be swallowed, or in the case of an inflamed and irritable stomach which prevents its being retained.

Secretion and Exhalation by the Skin.—Equally conspicuous with the function of absorption or supply is that of secretion, and of exhalation, depuration, or waste, as performed by the skin. Its appropriate secretions have been already mentioned. Some of these are for the formation of parts or appendages of the skin, as the epidermis or cuticle, and the nails; one is indirect, as the hair; another, the sebaceous, contributes directly to the healthy state of the skin; while the secretions of perspiration and of carbonic acid serve both to purify the blood by

the elimination of effete matters, and to exert an influence on the equalization of animal heat. We may infer that the oleaginous matter secreted by the sebaceous glands and follicles, besides its immediate purpose of lubricating the skin, and protecting the borders of the eyelids and the ear-passages, at which parts it is thick and abundant, is also an excretion, the removal of which from the blood is necessary to health. But the chief depurating processes are, the elimination of the perspirable fluid or sweat, and of carbonic acid.

Mention has already been made of the immense extent of the tubes of the sudoriferous or sweat glands, from which a secretion is constantly going on. Commonly the fluid is formed so gradually that the watery portion escapes imperceptibly, in the form of vapor, as fast as it reaches the surface. It is then called insensible perspiration. But during violent exercise, exposure to great external heat, in certain cases of disease, and when the air is already so loaded with moisture as to be incapable of receiving more, or when evaporation is prevented by the application of oiled silk or plaster, the secretion becomes sensible perspiration, and collects in drops on the skin. Insensible perspiration con-

sists, besides watery vapor, of carbonic acid and acetate of ammonia. The fluid of sensible perspiration, or sweat, holds in solution various saline substances, viz. phosphates of soda and lime, carbonate of lime, chloride of sodium (common salt), sulphate of soda, muriate of ammonia, and some potash, and lactic and acetic acids. Traces of iron and an animal matter have also been met with. These substances, however, are not all present at the same time. The acid reaction and sour smell of sweat are due, it is said, to lactic acid. In the above is included the secretion from the sebaceous glands, which is necessarily mixed with the sweat,—at any rate, it is absorbed by the clothing in common with this latter fluid. One of the experiments made by Mr. Thenard was on the perspiration collected in a flannel shirt which had been washed in distilled water.

Perspirable Matter given out by the Skin.—It is not necessary that I should repeat here the details of the experiments of Seguin, of Lavoisier, and others, nor those of Sanctorius at an earlier date, in order to determine the quantity of perspiration, and mainly that in the form of watery vapor, in a given period. The two great surfaces for the exhalation of watery vapor from

the body, are those of the skin and of the mucous or lining membrane of the lungs,—the pulmonary mucous membrane, as it is generally called. The entire loss by exhalation from the lungs and skin, during twenty-four hours, seems to average about three pounds and a half; and as the pulmonary exhalation is usually somewhat less than a third, and the cutaneous somewhat more than two thirds, the average daily loss from the skin may be estimated at two and a half pounds. Of this quantity not more than a sixth, however, is furnished by the vital process of secretion from the perspiratory glands; the greater part is the product of the simple evaporation of moisture which exudes from the skin, unaccompanied by the saline and animal matters and acids of the glandular secretion.

The discharge from the skin, or cutaneous exhalation, is less active when the digestion is impaired. It is most abundant during the period of digestion, and least so immediately after food is taken. This exhalation is influenced both by the state of the atmosphere and by that of the body itself; being promoted by a dry atmosphere and by active muscular exertion, and diminished in a moist atmosphere and by repose and indolence. The organs whose func-

tion most influences the skin are the kidneys. There is a direct reciprocity between cutaneous and urinary excretions, the deficiency of one being compensated by the increased action of the other, and this not merely in regard to the amount of fluid which they carry away from the blood, but also in respect to the solid matter which they eliminate from it.

It appears that at least one hundred grains of effete azotized matter are daily thrown off from the skin; and any cause which checks this excretion must increase the labor of the kidneys, or produce an accumulation of noxious matter in the blood. Hence attention to the functions of the skin, at all times a matter of great importance, is peculiarly necessary in the treatment of urinary diseases; and it will often be found that no means is so useful in removing the lithic acid deposit as copious ablution and friction of the skin, combined with exercise. The same observation applies also to Bright's disease or albuminuria, to the accession of which suppressed perspiration and intemperance so powerfully contribute.

The Skin a Respiratory Organ.—The skin, by absorbing oxygen from the atmosphere and secreting carbonic acid, is, in fact, a respiratory

organ, and as such it aids the lungs in producing that change in the blood on which the arterial color and other characters of this vital fluid, and the evolution of animal heat, mainly depend. In some of the inferior animals, respiration is performed by the skin alone; and in others, as in frogs, excision of the lungs is borne better than removal of the skin, although the quantity of carbonic acid exhaled by the cutaneous and the pulmonary mucous membranes is exactly equal. The importance of the respiratory function of the skin, even in the higher animals, is further manifested by the fact that if its surface be covered with an impermeable varnish, or if the body be inclosed in a caoutchouc dress, leaving the head exposed, they soon die as if asphyxiated,—the heart and lungs being gorged with blood, and their temperature during life gradually falling many degrees, sometimes as much as 30° F. below the ordinary standard.

If the knowledge of these facts could be impressed upon the vast multitude of both rich and poor who neglect proper ablutions, they would surely feel some alarm at their danger. They would reflect that their own skins must be thoroughly coated and the pores obstructed by a dense investing layer, the residue of perspira-

ble and sebaceous secretions, mixed with detached scales of the cuticle, dust, and other matters floating in the atmosphere, all of which have been allowed to accumulate for years; and they would seriously apply themselves to avert the consequences of their former neglect.

Diseases from Interrupted Functions of the Skin.—Every organ of the body is liable to inflammation, or some other form of disease, in consequence of disturbance or suspension of the cutaneous functions. This interruption is usually superinduced by the sudden or prolonged impression of cold and moisture, and especially by their partial application, as in a current of air. To this agency we may refer anginosa or throat affections, catarrh followed by acute bronchitis, pulmonary consumption, pericarditis, inflammation of the stomach and bowels, uterus, &c., rheumatism and gout, and not unfrequently fevers. Dyspepsia, with all its painful concomitants, is often kept up by the same cause. The operation of cold and moisture on the skin is rendered much more noxious when the impression suddenly alternates with either high solar or artificial heat, and when the skin is bathed in sweat after labor or other exhausting exercise.

Sympathy between the Skin and the Internal Organs.—The sympathy between certain portions of the skin and the internal organs is worthy of attention. When the latter are diseased, the skin of the extremities is sometimes morbidly cold, and at other times burning hot, while the rest of the cutaneous surface preserves its normal temperature. In certain fevers the skin of the epigastric region conveys to the hand of another person a sensation of great heat, while that on the limbs is little changed in this respect. The skin of the inside of the limbs, of the chest and abdomen, and along the spine, is warmer and more delicate and susceptible than that of other parts. But there is no invariable connexion between temperature and tactile power or touch, since we find that the skin of the extremities is generally a few degrees cooler than that of the trunk, though the delicacy of touch is incomparably superior in the former. As an organ of sense, and as connected with general sensation and volition, the skin is most powerfully affected in the portions covering the extremities; hence the benefits derived from stimulating and irritating applications to these parts when we desire to rouse the nervous system, and restore it to its accus-

tomed tone, as in cases of fainting or insensibility, stupor, and the like.

The connexion between the organs in the cavity of the chest and the skin is such that impressions made on the portion of the latter lining the arm and covering the side below the armpit, have a strong influence on the lungs and heart. Exposure of this portion of the cutaneous surface, common in children and females from the absurd style of dressing, is a frequent cause of catarrh, croup, and affections of the pleura.

There is also a very intimate sympathy between the skin of the inside of the thighs and that covering the inguinal regions and the lower bowels and uterus. Where there is much susceptibility of these organs to disease, the skin should be well protected, in both sexes, by warm clothing. Every intelligent physician is aware of the effects produced on the genital and digestive apparatus by the application of blisters and other counter-irritants to the inside of the thighs. We meet with numerous evidences of active sympathy between the skin and mucous membranes, including the organs lined by these latter—the lungs, digestive apparatus with its glandular appendages, the salivary

glands, the liver and pancreas, and the urinary organs; and consequently of the influence which it exerts over them, both in health and disease.

A knowledge of the various and important offices performed by the skin in the animal economy must awaken our attention to the means by which they can be best preserved from disturbance or interruption. The primary organic conditions for this purpose are, a certain degree of activity of the circulation of the blood in the extended network of vessels, and of fulness of the nervous tissue, and especially of the papillæ of the cutis vera, or true skin. Unless the first of these be secured the requisite secretions cannot take place; the blood will fail to be purified by the removal of effete matter, and the whole system will in consequence suffer from disorder of all the functions.

Bathing as a Purifier of the Skin.—It may be readily inferred from the description of the functions of the skin, that a large amount of excreted matter will accumulate on its surface in a short period, and give rise to effluvia both offensive to the smell and deleterious to the health of those coming within the range of its emanations, unless regular and thorough ablu-

tion be practised. To what extent the air is thus contaminated in crowded assemblages is rendered painfully sensible in theatres, courts of law, public meetings, and in crowded churches, especially in the evening,—to say nothing of fashionable parties and balls. Even in hospitals, with all their real and imputed discomforts, as now arranged and managed, we rarely find so impure and deleterious an atmosphere as in any of the places of resort just mentioned, when crowded in the evenings. Fevers of the most malignant type have originated from the animal matters thus discharged from the skin and lungs of a number of persons confined for any length of time in circumscribed space, with deficient ventilation.

A peculiarly offensive effluvium radiates from the bodies of individuals who have been thus crowded together, even for some time after bathing has been had recourse to. Individuals, also, who, without being thus confined, have long neglected personal ablutions and change of garments, and have been addicted to the use of ardent spirits, are often so many walking sepulchres, whose emanations are far less tolerable than those of the dissecting room itself. Some persons, who would resent the imputation

of uncleanliness, deceive themselves into a belief that if they overpower one odor by another, and conceal these animal emanations by vegetable extracts and sweet waters, they fulfil all the requirements of the toilet. They have yet to learn the important lesson, that no essences, though each drop should be as costly as the grains of a diamond, can avail either to cleanse or to beautify, without the use of water,—the universal fluid, the true panacea for all bodily impurities.

BATHS.

We now come to a consideration of the bath as the third means of securing the performance of the cutaneous functions.

The most simple and natural division of baths, as far as regards temperature,—that recognised by our sensations, and most applicable to the purposes of hygiene and of medicine,—is into cold, warm, and hot. The intermediate degrees between positive cold and warmth are vaguely expressed by the terms cool, temperate, and tepid; but for all practical purposes, it will be sufficient to include the two first of these under

the distinct head of cold, while the third, or tepid, will be classed among warm baths.

The cold bath ranges from 52° to 65°; the tepid bath from 65° to 85°; the warm bath from 85° to 97°; the hot bath upwards of 97°.

In the language of Dr. Steel, "A bath at about 95° degrees Fahrenheit, whether of mineral or simple water, is a pleasant thing. It is cleansing, refreshing, and soothing; and like a pleasant ride, or the society of a long absent friend, is auxiliary to health." But it is not strictly a medicinal agent at this temperature. Chronic maladies are cured by instituting states or conditions incompatible with morbid action. The patient is conscious of no shock, no impression, no inconvenience, no perceptible change. It is every way desirable in point of health and comfort; though not, at this temperature, efficient as a remedy. The invalid who has been forced from his home, and obliged to submit to the inconveniences of a place of public resort, does not come to be amused with remedies. He wants everything to tell on his disease.

What, then, are the principles which should guide the invalid, or his physician, in the employment of baths? Will it be deemed a gratuitous or unfounded assertion to say that the

faculty in general entertain very vague and unsettled views upon the application of baths to the removal of diseases. There are fixed opinions as to the use of the lancet, emetics, cathartics, blisters, anodynes, and tonics. But select a given patient, summon a dozen physicians in consultation, and ask for a decision; and if a majority pronounces in favor of the bath, let each assign the exact temperature, the length of time, and frequency of repetition, and you will find ample confirmation of the foregoing statement. Perhaps this discrepancy of opinion is only imaginary on the part of the writer. If so, he begs the indulgence of his brethren. Yet it is his honest belief, that if they would express their exact sentiments on this point, they would concur with him.

This vague apprehension of the principles of baths is by no means confined to the profession. Every man has a creed. The invalid has his; and the owners and attendants of the baths have theirs. Let a physician here order a bath of the proper temperature, and of such duration as to give a decisive blow to the disease, and the prescription will very possibly have to encounter a dozen comments and as many condemnations before the invalid reaches the bath-

house. And when arrived there great firmness and decision may be needed on the part of the patient, as well as unshaken confidence in the prudence and discrimination of his medical adviser, or these well-meaning and in other respects judicious attendants may obstruct the desired result. It may be necessary, too, for the patient or his friends to see with their own eyes that the thermometer stands at the point described. These intimations would appear unnecessary, but my professional experience has convinced me that they are by no means superfluous.

To describe fully the popular notions about baths would transcend my limits. One idea is almost universal, viz. that if a patient, whether feeble or strong, spare or plethoric, feels a glow after the cold or shower bath, it is the proper remedy. The mechanical effect of cold in contracting the muscular fibres, and the sensation of warmth, although the animal heat is for a long time actually lower than before the shock, are considered proof enough that the general effect is not only invigorating, but subversive of disease. There is a similar unity of opinion about the hot bath. If a person feels faint or feeble half an hour or an hour after leaving it,

or while in it, the measure is condemned,—although for hours the skin and cellular substance may contain two or three pounds of blood more than usual, to the great relief of the internal organs; while profuse and general perspiration may continue equally long, the lips and countenance become florid, the joints flexible, and a decided improvement be manifest after a few hours.

The principle is simply this, that in all febrile and inflammatory diseases, whether acute or chronic, in short in all diseases in which the use of the lancet is admissible, there also will the cold, tepid, or shower bath be suitable; and where the lancet would be injurious, there should the hot bath be used. The simplicity of this rule will probably startle some readers. It may be inquired, would you not take into the account such circumstances as plethoric habit, florid complexion, red tongue, the previous effect of warm and cold applications, and of tonic or debilitating remedies? Certainly. But I say most decidedly, and from many trials, that by throwing one's whole responsibility upon the exact condition of the pulse, and making this paramount to all other diagnostic symptoms, though not rejecting them as auxiliary guides,

a physician will be most effectually and infallibly aided by the powerful instrumentality of baths in the removal of disease.

Let us apply this principle to some well known diseases,—for example, rheumatism. A member of Clark's expedition beyond the Rocky Mountains was cured of an obstinate rheumatism, while remote from professional aid, by immersing himself once daily, for twenty-five days, in the river, through a hole cut in the ice. Each immersion was accompanied with shampooing and friction before a warm fire. A Mr. E. W., of Rome, N. Y., having lost all hope of recovery, crawled to a river whose edges were covered with ice, and lay in the water as in a bath. The disorder received such an impression that he was speedily restored to health. Mr. N., of New York city, was accidentally thrown into the sea in winter, near Stratford Point, and cured of rheumatism.

The hot bath, likewise, everybody knows to have been wonderfully efficacious in particular instances of this same complaint—rheumatism. The illustration of this principle in the treatment of rheumatism must suffice for all diseases. Disorders of the same name require, in different instances, the exhibition of different remedies.

As far as baths are concerned, a most scrupulous investigation of the pulse—carefully distinguishing when it is hard and wiry, and when soft and impressible—will form a safe guide in all ordinary cases. It should not be forgotten, however, that the daily use of hot baths may prove so stimulating as to be inadmissible when the patient attains a certain degree of tone; nor that the sedative effects of cold baths may be carried so far as to necessitate their discontinuance.

This, then, is my rule: If the pulse is hard—demanding calomel, Epsom salts, antimonials, or bleeding—whatever be the color or temperature of the skin, or the muscular strength, I prescribe a bath of from 65° to 85°, or cold shower, and have thus far had no reason to be dissatisfied with the result. On the contrary, if the pulse is soft and slow, I have without hesitation prescribed the hot bath from 100° to 110°, without any untoward result, although great languor may have been experienced while in the bath. If the patient had cool, perspirable skin, pale face, pale lips and tongue, the hot bath proved still more clearly beneficial.

Whatever may be the result of future observations, I can truly say that thus far, since

adopting this simple criterion, the ordering of baths has ceased with me to be a matter of painful uncertainty; and, moreover, that I have experienced extreme gratification in finding that when an accurate discrimination is made, and the remedy is boldly applied, from a low temperature up to 110°, according to the nature of each case, it has proved a much more efficient auxiliary, and in many cases has been the main promoter of rapid convalescence.

It will not be inappropriate in this place to append some considerations on the hygienic and therapeutical use of vapor bathing.

Therapeutical Effects of Vapor Baths.—Without endorsing the extravagant eulogies of Sanchez on the remedial power of the vapor bath, we must admit that it is susceptible of far more frequent and diversified application than it commonly receives in medical practice. Independent of the different therapeutical results arising from the conditions of dryness or moisture, the bath must be taken into account. In eruptive fevers (Exanthemata) vapor bathing has been practised with considerable benefit,—the temperature and duration of the bath being modified according to the stage of the disease, as in fevers generally. Much relief has been obtained

from this remedy in the œdematous swelling so common after scarlet fever, and occasionally, also, after measles. Erysipelas, erythema urticaria, and pemphygus, have also been treated with success by the same means. Rheumatism and gout, in their chronic forms, have long been adduced as diseases in which the greatest relief has been obtained by vapor baths,—both of the moist and dry kinds. M. Rapon speaks of the remedial powers of this agent with a confidence derived from his large experience of its effects in rheumatism, of which, he assures us, he has met with upwards of eight hundred cases in three years. Well may he describe this disease as endemic in Lyons, the city in which he erected his fine establishment for vapor bathing, and in which he noted the cases that furnished him with his clinic. This writer refers to the early and wide-spread use of this variety of bathing, for the cure of rheumatism, in the north of Europe,—Russia, and Finland, and even in England, especially at Nottingham Hospital, also in Germany and Italy, and more particularly in Naples.

We quote the following judicious remarks from M. Rapon, to show that, however successful in his treatment, he does not countenance

extravagant expectations from the exclusive use of this remedy:—

"Most commonly we obtain from the use of vapor baths alone, methodically directed, the effects which were promised; but it sometimes happens that we are obliged to associate with them certain auxiliary means of more or less energy, which add to or modify their action and increase their efficacy. Thus, for example, by means of general blood-letting and leeches, simple or medicated frictions, shampooing, flagellation, or even internal remedies appropriately administered, either preparatory to or conjointly with the vapor, I have succeeded in curing a great many diseases which would have proved intractable to these various means separately employed."

These observations furnish a practical commentary on the absurd and mischievous exclusivism of those pretenders to the healing art who place their sole reliance for the cure of all diseases on one remedy or therapeutical agent, whether it be the vapor bath or hydropathy. Mr. Rapon, after having recourse to preliminary evacuations when he deemed them advisable, subjected his rheumatic patients, first, in a recumbent posture, to the oriental bath, as he

terms it, or moist vapor aromatized, and then to dry sulphur vapor, inclosing the body up to the neck in a case. Syphilitic rheumatism has been treated with marked benefit by means of the vapor bath. So, also, has been gouty rheumatism, and rheumatism in which metastasis occurs.

Gout, both acute and chronic, has been greatly relieved by the remedy in question. In the acute form, Mr. Rapon applies leeches to the inflamed joint, and uses other sedative means before he has recourse to the bath. Scrofula in its various forms finds a valuable remedy in the vapor bath. Tumefactions of the lymphatic glands along the neck, especially those of a scrofulous nature, have been discussed by the vapor from salt water.

In the complications of scrofula with syphilis, a condition of things more common than is generally supposed, and which is singularly difficult to treat, vapor bathing, especially by dry and sulphurous fumigations, is unrivalled by any other remedy, as I shall soon have occasion to remark.

Sulphurous Vapor.—I now propose to offer some remarks on dry medicated vapor, and particularly on the variety in which sulphur is

sublimed and diffused in the heated air of the bath. The chief mineral substances employed in fumigation are sulphur, cinnabar (deuto-sulphuret of mercury), calomel (protochloride of mercury), corrosive sublimate (deutochloride of mercury), the protoxide of zinc, deutoxide of arsenic, and sulphureted hydrogen gas (hydro-sulphuric acid).

Sulphur, when projected upon a metallic plate of the temperature of 230° F., is converted into vapor without being decomposed. On raising the temperature to 300°, and directing a current of atmospheric air upon it, the sulphur burns with a bluish flame, and by combining with oxygen forms sulphurous gas. It is necessary, therefore, to modify the apparatus, and regulate the heat of the metallic plate according as we wish to procure the one or the other of these results in the combustion of the sulphur.

Although sulphurous fumigations had at an early date been recognised as a remedy for diseases of the skin, their therapeutic effects have only been ascertained with any degree of accuracy since the first part of the present century. Passing over antecedent periods, we find Glauber, in 1659, making distinct reference to sul-

phur fumigations for the itch. To Gales, who was for a number of years apothecary to the Hospital of St. Louis, at Paris, the profession and the world at large are indebted for the introduction of sulphurous fumigations for the methodical and successful treatment of cutaneous diseases. In 1812 he commenced a series of inquiries respecting the cause of the itch (Scabies), which he demonstrated, as, indeed, others had done before, to depend on the presence of an insect, the acarus scabiei. He next turned his attention to discover a remedy which would be safe, expeditious, and easy of application. The result was, not the discovery of a new remedy, but of the means of so applying an old one as to render its use general, and to remove the objections which had hitherto prevented its introduction into practice. His first trials (in the month of August, 1812) were, it must be acknowledged, with a very simple, but at the same time crude contrivance. It consisted merely of a heated pan, in which flowers of sulphur, mixed with the nitrate of potash, were thrown, and the whole introduced under the bed-clothes, which were tucked in as close as possible about the body of the patient.

The complication of various obstinate diseases

of the skin with scabies, and the radical cure of some of these, and the great amelioration of others, by the use of the fumigations instituted for the removal of the itch, gave a wider direction to the inquiries of Gales. Sir A. Clark asserts that the effects of mercury, given for the cure of syphilis, are more prompt, diffusive, and benign, and that salivation is less apt to occur and is less violent, if combined with sulphurous fumigations and the common vapor bath. Experience has now satisfied us, that for the cure of syphilis in its various stages, we may often rely on these adjuvants to the entire exclusion of mercury. In the secondary forms of the disease, when the throat is the seat of ulcerations, or the skin of blotches, or still further, the system of fibrous nodes, syphilitic rheumatism, &c., the treatment by alternate sulphurous fumigations and moist vapor will often be attended with complete success. Ulcers, whether scrofulous or mercurial, or associated with depraved digestion, will yield to the same course, provided a plain, light diet, and dilution by simple beverages, be observed at the same time.

Among the numerous cases detailed by Assalini, in which he used the vapor bath and fumigations with decided success, were those of

tumefaction of the inguinal glands, with and without syphilitic taint; inflammation of the parotid gland; acute rheumatism in a joint or limb; chronic rheumatism; chlorosis; ulcers after congelation of a part; squamæ in various forms, sometimes with suppressed hemorrhoids, or with syphilitic or hepatic disorders; cough, sometimes convulsive, at others with symptoms of incipient consumption; hemiplegia and other forms of palsy; gout; hepatic obstructions; and sciatica (this last complicated with nausea in one case, and in another with hemoptysis). In a case of hypochondriasis with neuralgia, Assalini obtained the happiest results by the use of sulphurous fumigations, and by substituting a light vegetable diet with fruit and milk, in place of aromatic and tonic tinctures, and a stimulating regimen.

The temperature of the sulphur bath was generally about 100° F. In one instance, in which it was gradually raised from 95° to 104°, the patient, affected with pityriasis, sweated profusely. Dr. Bardsley, in a report on the remedial efficacy of sulphurous fumigations, specifies the particular kinds of cutaneous disease in which he chiefly employed them, and with highly favorable results. These are scabies, im-

petigo, porrigo, prurigo, lepra, psoriasis, ichthyosis, and pompholyx.

Sulphureted hydrogen gas has been used by Rapon in the form of bath and douche. He protests against the common opinion of its being an excitant, like the vapor of sulphur and sulphuric acid; but on the contrary, it ought, he assures us, to be regarded as a cooling and sedative remedy of great value.

Of the different mineral preparations which furnish materials for medicated vapor baths, the mercurial are the most employed. The fumes of cinnabar produce effects on the skin analagous to those of sulphur. Two drachms constitute the quantity requisite for a fumigation.

IV.

INTERNAL USE OF THE SHARON WATER.

We now proceed to offer some directions for the use of visitors on their arrival at the Springs.

The first inquiry made by the invalid after suitable lodgings are procured, is, of course, "How shall I take the waters? Where begin? What springs; in what quantities; and at what hours?" These questions can be solved at every corner. In the language of the late Dr. Steel, "There are numerous persons who flock about the Springs during the season, without any knowledge of the composition of the waters, and little or none of their effects, who contrive to dispose of their directions to the ignorant and unwary, with no other effect than to injure the reputation of the waters, and disappoint the anticipations of the invalid." The public have long since decided, and correctly, that in a vast majority of diseases these waters should be taken with a primary regard to their cathartic

properties; although they unavoidably prove at the same time diuretic, deobstruent, and even diaphoretic. When their effects are exerted on the kidneys or skin they sometimes produce a constipating effect; yet it is their impression on the bowels which seems to make the most palpable inroad on existing disease.

I know full well the risk I incur, owing to the peculiarities of individual constitution, in submitting a list of those diseases which I deem most fitted to the alterative action of the waters. Yet the reader is entitled to my opinion, such as it is; and I therefore insert the following, without much regard to nosological arrangement, as comprising most of the diseases likely to be benefited by an aperient course of the mineral waters: Dyspepsia in all its forms; constipation; chronic diarrhœa; hemorrhoids; jaundice; biliary calculi; palsy without inflammation of the brain; hysteria; hypochondriasis; neuralgia, or nerve-ache, whether seated in the face, stomach, liver, bowels, uterus, or extremities; chronic catarrh; humid asthma; nervous palpitations; enlargement of the liver and spleen; incontinence of urine; gravel; leucorrhœa; irritable uterus; cutaneous eruptions; rheumatism; rheumatic enlargement and stiffness of the joints;

diabetes; prostrate and stationary conditions after acute diseases; dropsies; vertigo; periodical headache; spinal irritation; and stricture of the rectum.

The next question is, What spring shall be selected? It requires very little knowledge of medicine to understand that two persons who are laboring under the same chronic disease, owing to their individual peculiarities of constitution, recover by the use of very dissimilar remedies. Physicians have given the name of idiosyncrasy, or diathesis, to this peculiarity of constitution; and in order that the proper waters and baths should be adapted to the diathesis of each individual, it is necessary to consult the physician acquainted with its therapeutics. By referring to what has been said of the peculiar properties of each spring, it will be perceived that there is a great difference in the stimulating and bracing qualities of the various fountains. The White Sulphur is tonic, stimulating, and alterative, making it serviceable in all chronic and debilitated conditions of the system; whereas the Magnesia water is antiphlogistic and alterative, while the Chalybeate is tonic and hematic. Although I wish to be understood as saying that chemical analysis can never supply the

place of a scrutinizing and guarded observation of medicinal effects, I can yet truly assert, that from six years' experience, I have found a most striking coincidence between results predicated on these two modes of discrimination.

If the invalid is liable to fever, heat, or dryness of the skin, and is of a full habit,—if he bears abstinence well,—if bleeding, calomel, and salts are beneficial,—if tonic and stimulating medicines and heating diet injure him,—and above all, if his physician has frequently observed that his pulse is generally hard and incompressible, he may safely conclude his diathesis to be inflammatory, and should resort to the Magnesia Spring for his morning draught. On the contrary, if he has a cool, pale skin,—is little irritated by medicines,—bears bleeding and other modes of reducing badly,—takes tonics well,—thrives on a generous meat diet,—and has a soft, slow pulse, he may turn at once to the Sulphur or the Chalybeate Spring.

Should the waters in either case prove too stimulating, the patient will discover it by gradual loss of appetite, sense of fulness, general oppression, feverishness, and sometimes cholera morbus. In such a case the invalid often loses the whole expense and trouble of his journey by

flying homewards in a panic, when a couple of days' abstinence from the water and from food, saline medicines and antimonials, and, in some rare instances, bleeding, will almost invariably remove the "water storm," and allow the patient to complete a course of treatment at the Springs.

The proper time to take these waters as a cathartic is in the morning, and in the morning only. The reasons are obvious. A period of sixteen hours has elapsed since the principal meal of the preceding day, and eleven hours from the repast of the evening. In people of weak or irritable stomachs, this is the only time in the twenty-four hours in which the digestive organs are not engaged in the solution or absorption of aliment. This, then, is the precise period to interpose a mild, exhilarating, and efficient cathartic, and this should be taken so early and in such quantities as thoroughly to evacuate all the remains of the preceding day's digestion, and to make so much impression on the mucous membranes of the alimentary canal as to rectify the process of secretion itself. This is the true Abernethean road to health to multitudes of bilious and dyspeptic invalids; and will continue to be the most approved method of

medication, notwithstanding the numerous and laudable efforts that are made by the fraternity to discover a better way.

From two to four glasses is the proper quantity. In some rare cases of females, however, the stomach has not the capacity to contain even one glass before breakfast. Many men, on the other hand, can take eight and even ten half pints in the morning with ease and comfort. Whatever be the quantity that is ultimately found necessary by each person, it should be taken in three potions, and with short intervals between, occupying thirty or forty minutes in all. Brisk exercise, by walking or otherwise, is necessary during this time and for a short period afterwards; and at least an hour—and better, an hour and a half—should elapse between the last potation and breakfast. Many invalids do not see the necessity of drinking the water at the fountain. Yet the invalid should never be deterred by indolence, irresolution, or imaginary fears from going to the spring, as it is far better to take the beverage from the fountain, while the spirits are enlivened by the surrounding influences, and to take it fresh, too, from the bosom of the earth.

In concluding the subject of the cathertic

effects of these waters, it should be added, that in case six or eight tumblers in the morning are found inadequate to produce the desired effect, it will not be advisable to take an additional quantity in the course of the day. Wait till the following morning; and even then do not increase the quantity of water, but aid its operation by some thorough cathartic medicine. If the patient be of full habit, blue pills, taken for several evenings before going to bed, may be suitable, or active doses of calomel for two or three days at the same time. A table-spoonful of Epsom salts or a dose of calcined magnesia may be administered at bed-time, or with the first tumbler in the morning. In feeble habits, some of the compound gum-resinous pills or a few grains of rhubarb may be preferable. Whatever article is selected as an auxiliary remedy, enough should be taken to insure a thorough operation, after which, in general, it will be preferable to continue the water alone.

I would state here, before leaving this subject, that salines—*i. e.* salts of the alkaline and earthy metals—are all more or less purgative when given under certain conditions. In other circumstances they may pass off from the body by the kidneys or the glands of the skin. Suppose,

then, the sulphate of soda or magnesia which is contained in the Sharon Springs to have obtained entry into the blood, it may be excreted by the kidneys or the bowels. The result appears to depend mainly upon the amount of the dose. A small quantity may pass in the urine, and will not produce purging; but a large quantity cannot so pass; it is excreted by the bowels, and acts as a purgative.

It is not generally known at Sharon Springs that its mineral water is cholagogue in its nature,—*i. e.* it stimulates the action of the liver, and promotes the excretion of bile. There is no doubt that the function of the liver, regarded simply as a gland, is of great importance in the animal economy. We know that certain matters are excreted from the system by that organ, which, if allowed to remain in the blood, as in the case of jaundice, are found to be hurtful. The great majority of intestinal diseases, as also of chronic blood-disorders, are associated with a torpidity or derangement of the function of the liver. We find this to be the case with diarrhœa and constipation, with dysentery and cholera, as well as with ague and remittents, gout and rheumatism, and scrofula. I have witnessed in innumerable instances the beneficial effect of a

persevering use of the Sulphur water in these complaints.

The best way to obtain the alterative effect of the Sulphur water on the liver and skin is to take it in such quantities as shall not purge, so that the waters shall be retained as long as possible in the circulating mass, and in this way gradually produce a new condition of the solids and fluids, improving the strength, appetite, and color, and regulating the secretions of the stomach, bowels, liver, and kidneys. In the language of Dr. Steel, "To the long-continued invalid, who has painfully learned the difficulty of escaping from under the hands of disease, this mode of medication will seem at first view as consistent and rational. He has abandoned all hope of being cured by a few powerful doses of any medicine. His thoughts are upon a gradual removal of diseased processes, and restoration of healthy ones; and if he is true to his own interests, he has come to a settled conviction that time is a necessary ingredient in his recovery, and to an equally settled determination that if a few weeks of hopeful amendment do not establish his health, he will spend months or years in its attainment."

But to return to the consideration of a perse-

vering use of the Sharon waters, and particularly as an alterative. This manner of using them consists in taking them in the quantity ordinarily of one tumbler, an hour before or just after each meal, and at the hour of rest. Two tumblers are not too much for an adult, provided they do not prove decidedly cathartic. The object is to keep the whole amount of saline matter, amounting to nearly thirty grains to each tumbler, in the circulating fluids as long as possible. This method might be useful to very many; but the cases in which, in my own experience during the six seasons past, it has proved most happy, are those where the disease is of long standing, and where the system requires a tonic and invigorating course.

RICHFIELD SULPHUR SPRING.—*Otsego County.*

Analysis by Prof. Reed, of New York.

One gallon contains,

Bicarbonate of magnesia,	20	grains.
Bicarbonate of lime,	10	"
Chloride of sodium and magnesium,	1.5	"
Sulphate of magnesia,	30	"
Hydro-sulphate of magnesia and lime,	2	"
Sulphate of lime,	90	"
Solid contents,	153.5	grains.
Sulphureted hydrogen	20.6	inches.

AVON SPRING.—*Livingston County.*

ANALYSIS BY PROF. HADLEY.

Sulphate of lime,	84	grains.
Sulphate of magnesia,	10	"
Sulphate of soda,	16	"
Carbonate of lime,	8	"
Muriate of soda,	18.4	"
Solid contents,	136.4	grains.
Carbonic acid,	5.6	inches.
Sulphureted hydrogen,	12	"
	17.6	inches.

BEDFORD SPRING.—*Pennsylvania.*

ANALYSIS BY DR. CHURCH, of Pittsburg.

Sulphate of magnesia,	80	grains.
Sulphate of lime,	15	"
Muriate of soda,	10	"
Muriate of lime,	3	"
Carbonate of lime,	8	"
Carbonate of iron,	5	"
Loss,	3	"
Solid contents,	124	grains.
Carbonic acid,	7.4	in.

In conclusion I would say, that the family physician should state fully and honestly to the patient the absolute necessity of a thorough and

extended trial of the waters. Experienced physicians know very well that a complete medicine, which, by internal and external exhibition, can be made to operate as an alterative, deobstruent, antacid, aperient, diuretic, and tonic, should not be abandoned on a slight trial. They know, too, what their patients cannot appreciate, that time is absolutely necessary for the removal of deep-seated and long-continued maladies. How preposterous, then, for invalids who have been laboring under the influence of disease for months or years, to hope that they can eradicate or banish their complaint in one or two weeks!

I have been frequently asked by persons taking homœopathic medicine, whether the use of the mineral water would interfere with its curative effects. To this inquiry I would answer that the homœopathic doses will not interfere with any mineral water, or with anything else. The doctrine of homœopathy is so absurd, that any man of common sense who should examine its claims would be disgusted with its doses, to say nothing of its principle—*similia similibus curantur*. The main facts to be urged against this doctrine may be reduced to four heads:—

1st. Some of our best and most certain medicines cannot be regarded as homœopathic.

Thus, substances which destroy the itch-insect (Acarus scabiei) and thereby cure the itch, are incapable of producing this malady. Andral took quina in the requisite quantity, but without acquiring intermittent fever; yet no person can doubt the fact of the great benefit to be derived from the employment of this agent in ague,—the paroxysms cease, and the patient seems cured. "But," says Hahnemann, "are the poor patients really cured in these cases?' All that can be said is, that they seem to be so; and it would appear, according to this homœopathist, that patients do not know when they are well. We are also told that whenever an intermittent resembles the effects of cinchona, then, and not till then, can we expect a cure. I am afraid if this were true, very few agues could be cured.

2d. In many cases homœopathic remedies would only increase the original disease; and we can readily imagine the ill effects which would arise from the exhibition of acrid medicines in gastritis, of cantharides in acute inflammation of the bladder, or of mercury in salivation.

3d. The doses in which these agents are exhibited are so exceedingly small that it is diffi-

cult to believe they can produce any effect on the system; and we may infer that the supposed homœopathic cures are attributable to a natural and spontaneous cure, aided, in many cases, by a strict attention to diet and regimen. What effect can be expected from a decillionth part of a drop of laudanum, or a millionth of a grain of charcoal? Hahnemann says it is foolish to doubt the possibility of that which really occurs; and adds that sceptics do not consider the rubbing and shaking bestowed upon the homœopathic preparation, by which it acquires a wonderful development of power.

4th. Homœopathy has been fairly put to the test of experiment by some members of the Academie de Medicine, and the result was a failure. Andral tried it on one hundred and forty patients in the presence of the homœopathists themselves, adopting every requisite care and precaution, yet in no one instance was he successful.

PROFESSIONAL ADVICE BEFORE LEAVING HOME.

The writer has often thought that if invalids who propose to come here would confer with their regular medical attendant previously to leaving home, they might receive directions which would not only prove useful, but save them from unnecessary expense. "Many come here," says Dr. North, "without any professional advice or preparation. Having wearied out their physician, or gone the round of all the nostrums, they resolve to spend two or three weeks drinking and bathing in the pools of Sharon." A visit to the Springs is somehow to cure them. Just as if they should say, in an ordinary attack of sickness, "I will go to the druggist's, and procure some medicine." Ah! but what medicine? "No matter: medicine is medicine." But how do you know that your present disorder will be benefited by the medicine you select? "I don't pretend to know; but I am sick, and there must be something on the shelves of the apothecary, to whom everybody resorts, that will cure me." In the same manner valetudinarians

often visit mineral springs. Without knowing whether their diseases be inflammatory or the reverse,—whether they need the water as an alterative, diuretic, cathartic,—whether they need the warm, cold, or shower bath, or neither,—they come bent on two simple purposes,—to deluge the stomach with as much water as they can swallow, and to resort frequently to the baths. In this way the hopes of the patient are often blasted, and he departs wondering that such crowds should resort to a place where he has gathered nothing but trouble and disappointment.

To the healthy and well balanced frame, a tumbler of the sparkling and delicious beverage, although it contains over twenty-eight grains of various saline matters, besides the gases, can do little mischief; and if ten or twelve tumblers are taken, the conservative powers of such a system will usually manage to avert the evil. But when the patient comes with the whole economy in a deranged condition, he cannot swallow ten or twelve tumblers of this potent medicine every day with impunity; and after a few repetitions he often goes home in despair, with every inflammatory tendency aggravated, and every irritation increased by the very remedy which has restored health to his neighbors and friends.