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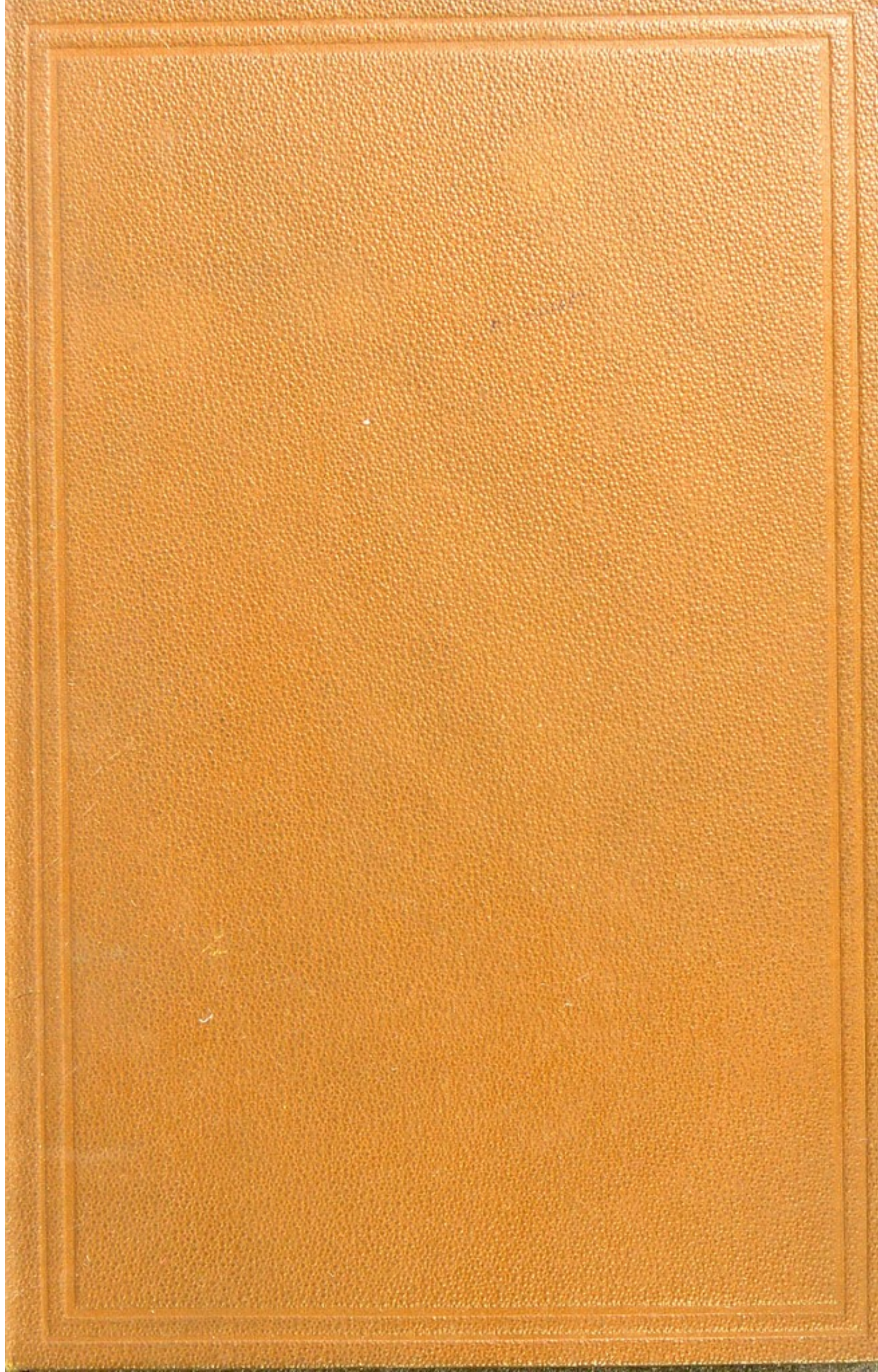
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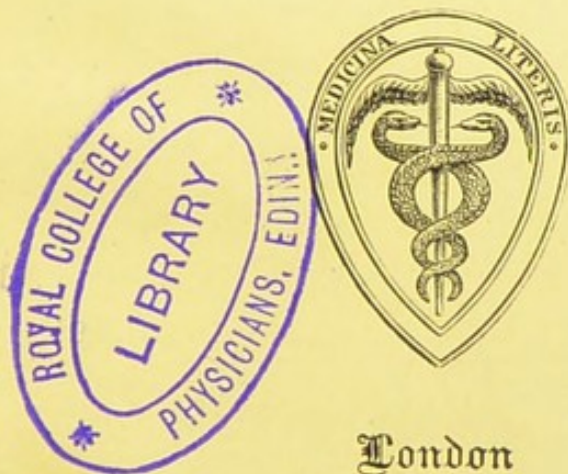
A TREATISE
ON
GOUT, RHEUMATISM
AND THE
ALLIED AFFECTIONS

By PETER HOOD, M.D.

THIRD EDITION

(REVISED AND ENLARGED)

WITH A CHAPTER ON SLEEP



London

J. & A. CHURCHILL

NEW BURLINGTON STREET

1885



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PREFACE TO THE THIRD EDITION

IN preparing a Third Edition of this Treatise for the Press, I have carefully reconsidered the whole of the text, but without finding occasion for any important alterations. The Chapter on Longevity, which appeared in the Second Edition, has been retained : and a new Chapter on “Sleep” has been added.

11, SEYMOUR STREET, W.

March, 1885.

PREFACE TO THE FIRST EDITION

IT has been a frequent subject of complaint, on the part of purchasers of medical literature, that it is comparatively rare to meet with books which contain the matured results of long practical experience. Those by whom alone such books could be written have in most instances reached a period of life at which ease is more grateful than labour ; and they too often sink to their rest, leaving no record of the principles on which they had come to act in the latter days of their activity. I have long cherished the desire to free myself, at least, from this reproach, and to set forth the light in which the various hypothesis and conjectures, that have clustered round a very prevalent disease, present themselves to the physician who has studied their value at the bedside. I have striven to describe gout and rheumatism as I have seen them, and to describe also the means by which their assaults may be repelled.

In every period, the language of the younger school of scientific writers is apt to assume characteristics peculiar to the time ; and the date of an author may often be discovered by the exact phrases that he employs. It may possibly seem to some of my juniors that I now and then use forms of words suggestive of

PREFACE

a time at which their studentships had not commenced, and that my phrases step beyond the limits of the now accepted groove. I have not been careful in this matter. I have sometimes stated, and assumed as truths, doctrines in support of which I can adduce no chemical or physiological experiments ; but which have been slowly formed amid the work of healing, and which are deeply graven upon my mind by the finger of time. They have stood so well the tests by which I have tried them, that I can subject them without fear to any other.

To the medical student, and to the young practitioner, it seems to be the business of his life to learn how to cure diseases. He enters upon his work full of enthusiasm, and armed, he thinks, in complete panoply of knowledge. He soon finds that he must allow for the presence of a new factor in his familiar problems ; and that this factor is—the sick man ! His school-work avails him little, until he discovers that here, after all, is the essential element with which he has to deal ; that the disease is but an accident, and that the man remains. When once this lesson has been mastered, he perceives that he had perchance mistaken the goal at which he should aim ; and he addresses himself earnestly to the treatment of patients. I would fain hope that what I have written may sometimes help him in this undertaking.

LOWER SEYMOUR STREET,

January, 1871.

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A TREATISE ON GOUT, &c.

CHAPTER I.

INTRODUCTORY

OUR acquaintance with gout dates from the dawn of medical writing, and is interwoven with the history of literature. The labours or the conjectures of modern authors have indeed furnished us with a succession of hypothesis about the nature and causes of the disease ; but they can scarcely be said to have increased our knowledge of its phenomena, or materially to have enlarged our resources for its treatment. In all ages it has been the scourge of sedentary habits and of easy circumstances: and thus it has been experienced by many persons, both in and beyond the profession of medicine, whose descriptive powers have been cultivated to the highest pitch of excellence; and who have given to posterity accounts of their sufferings, which left little to be told by those who followed them. Many of these writers, however, seeking to find some solace in their affliction itself, have brought into undue prominence the gout of kings, princes, and nobles, of the illustrious, the learned, and the wealthy, and have thrown into undue shadow that of the humble and the undistinguished. They have thus occasioned a widely-spread belief that gout is in itself a sort of patent of nobility, a heritage that speaks of illustrious ancestry, a claim to social and intellectual distinction. Great

men have been slow to acknowledge the genuineness of the gout of those beneath them; and fashion has laughed at the swollen feet of the *parvenu*. Few of Sidney Smith's jokes are better known than his exclamation at a dinner party, where the chair of a newly risen celebrity was left vacant, as it was alleged, on account of his gout. "Gout, indeed!" said the privileged jester; "I should think rheumatism was good enough for him!" It is a pardonable frailty which strives to link the greatness of the great with their sufferings, and to find relief from pain in the reflection that it has fallen also to the lot of those whom we should most desire to resemble; but, in this instance, at least, there is an error lurking beneath the supposed analogy. As a rule, gout means self-indulgence; and although it may sometimes depend on a neglect of health while the thoughts are given to higher cares and duties, yet generally speaking, it admits of a different explanation. There are many cases on record in which the gouty have been cured by a reverse of fortune which compelled them to lead active and abstemious lives; and, on the other hand, there are also many in which the disease has been kept at bay until these salutary habits were abandoned, and has first seized its victims firmly when they surrendered themselves to luxury and ease. Perhaps the best examples of each kind are historical; one of them being furnished by the story, familiar to most of us from our boyhood, of the visit of king Henry VIII. to the abbey of Reading; and the other by the illness that embittered, and at length closed, the retirement of the emperor Charles V. of Spain. The latter, moreover, has not only the merits of being striking and authentic, but it also affords the most interesting account on record of a great historical person who was a martyr to gout. The necessary details have been sought out with infinite care and pains by Mr. William Stirling, and given to the world in his work entitled, "The Cloister Life of Charles V.," from which I shall proceed to quote such parts as belong to my present subject. First of all, however, I will proceed to relate the story of the bishop.

When Henry VIII. was a young man he was passionately fond of hunting. In the ardour of the chase he lost his way, and made for the nearest town, which happened to be Reading in Berkshire. He at once resorted to the best place to obtain food, of which he stood much in need, and this was the abbey of Reading the ruins of which are still remaining. He was shown into the presence of the bishop, who had just sat down to the midday meal. On the table was a noble piece of beef, which the king instantly attacked, and from which he ate very heartily. The bishop looked at his guest with wonder, and exclaimed, "Oh, what would I give were I but blessed with such an appetite as yours! I can, alas! eat nothing but the wing of a chicken or the leg of a small rabbit."

A month afterwards an order arrived for the bishop to appear in London, and he was instantly sent to the Tower. There he was kept on bread and water for six weeks. At the end of that time a piece of beef of similar dimensions to that on which the king had feasted at Reading was ordered to be taken to the bishop's cell. The bishop with delight instantly fell to, and made as vigorous an onslaught upon this joint as he had formerly seen made upon his own. At this crisis the king appeared in regal splendour; the bishop suspended his attack, and fell on his knees entreating to know the cause of his offence.

The king had witnessed, unseen, the bishop's meal, and instead of replying to his inquiry, exclaimed, "Oh, my lord, what would I give were I but blessed with such an appetite as yours! For my part, so weak is my stomach, that I can digest nothing but the wing of a fowl, or the leg of a small rabbit." The bishop's eyes were at once opened as to the cause of his punishment, as he recognised his former guest in the person of his sovereign, and divined the reason of his imprisonment.

The emperor Charles V., when in his fifty-sixth year, abdicated the throne in favour of his son, Philip II. Mr. Stirling in describing his character, says, "Until he appeared in Italy in 1529, the thirtieth

year of his age, his strong will had been as wax in the hands of other men. Up to that time the most laborious, reserved, and inflexible of princes was the most docile subject of his ministers. His mind ripened slowly, and his body decayed prematurely. By nature and hereditary habits a keen sportsman, in his youth he was unwearied in tracking the bear and the wolf over the hills of Toledo and Granada ; and he was distinguished for his prowess against the bull and the boar. Yet ere he had turned fifty he was reduced to amuse himself by shooting crows and daws among the trees of his garden. The hand which had wielded the lance and curbed the charger was so enfeebled with gout, that it was sometimes unable to break the seal of a letter.

In the autumn of 1556, early in September, the emperor left Flanders for Spain on account of his ill-health, and reached the Vera of Plasencia, in Estremadura, on the 12th November, and retired to a monastery at Yuste, inhabited by friars of the order of St. Jerome, and here he ended his days.

Mr. Stirling, from various records, enters into the most interesting and circumstantial details of the daily life and habits of the emperor, which will amply repay perusal ; but upon these, beyond tracing the history of his illness and its cause, I do not desire to encroach.

Mr. Stirling says, at page 37, "In this matter of eating, as in many other habits, the emperor was himself a true Fleming. His early tendency to gout was increased by his indulgence at table, which generally far exceeded his feeble powers of digestion. Roger Ascham, standing 'hard by the imperial table at the feast of the golden fleece,' watched with wonder the emperor's progress through 'sod beef, roast mutton, baked hare,' after which 'he fed well of a capon ;' drinking also, says the fellow of St. John's, 'the best that ever I saw ;' he had his head in the glass five times as long as any of them, and never drank less than a good quart at once of Rhenish wine.*

* Works of Roger Ascham : 4to, London, 1761, p. 375,

"Eating was now the only physical gratification which he could still enjoy, or was unable to resist. He continued, therefore, to dine to the last upon the rich dishes against which his ancient and trusty confessor, Cardinal Loaysa, had protested a quarter of a century before. The supply of his table was a main subject of the correspondence between the majordomo and the secretary of state. The weekly courier from Valladolid to Lisbon was ordered to change his route that he might bring every Thursday a provision of eels and other rich fish (*pescado grueso*) for Friday's fast. There was a constant demand for anchovies, tunnies, and other potted fish, and sometimes a complaint that the trouts of the country were too small; the olives on the other hand were too large, and the emperor wished instead, for olives of Perejon.

"One day, the secretary of State was asked for some partridges from Gama, a place from whence the emperor remembers that the count of Orsonó once sent him into Flanders some of the best partridges in the world*. Another day, sausages were wanted 'of the kind which the queen Juana, now in glory, used to pride herself in making in the Flemish fashion at Tordesillas,' and for the receipt for which the secretary is referred to the marquess of Denia. Both orders were punctually executed. The sausages, although sent to a land supreme in that manufacture, gave greatest satisfaction. Of the partridges, the emperor said they used to be better, ordering, however, the remainder to be pickled."

"The emperor's weakness being generally known or soon discovered, dainties of all kinds were sent to him as presents. Mutton, pork, and game were the provisions most easily obtained at Xarandilla; but they were dear. The bread was indifferent, and nothing was good and abundant but chestnuts, the staple food of the people. But in a very few days the castle larder wanted

* The count managed that they should reach Flanders in perfect condition by *echandoles oien en la boca*. The emperor considered that this singular preservative would not be necessary in the present journey.

for nothing. One day the count of Oropesa sent an offering of game; another day a pair of fat calves arrived from the archbishop of Zaragoza; the archbishop of Toledo and the duchess of Frias were constant and magnificent in their gifts of venison, fruit, and preserves; and supplies of all kinds came at regular intervals from Seville and Portugal."

"Luis Quixada, who knew the emperor's habits and constitution well, beheld with dismay these long trains of mules, laden, as it were, with gout and bile. He never acknowledged the receipt of the good things from Valladolid without adding some dismal forebodings of consequent mischiefs, and along with an order he sometimes conveyed a hint that it would be much better if no means were found of executing it. If the emperor made a hearty meal without being the worst for it, the majordomo noted the fact with exultation, and he remarked with complacency his majesty's fondness for plovers, which he considered harmless. But his office of purveyor was more commonly exercised under protest; and he interposed between his master and an eel-pie as, in other days, he would have thrown himself between the imperial person and the point of a Moorish lance."

"In the beginning of January, 1558, the emperor continued to be troubled with flying gout; he complained of itching and tingling in his legs, from the knees downwards; and he was sometimes seized with fits of vomiting. At the end of the month the news of the loss of Calais reached Valladolid, and Yuste on the second of February. This melancholy news added greatly to the emperor's suffering, and aggravated his gout, which so completely disabled his fingers, that, instead of signing the necessary despatches, he was obliged to seal them with a small private signet. In spite of his eider-down robes and quilts, he lay in bed shivering, and complaining of cold in his bones. His appetite was beginning to fail him, but his repasts, though diminished in quantity, were still of a quality to perplex the doctor: consisting principally of the rich fish which the patient could neither dispense with nor

digest. His favourite beverage at this time was *vino bastarda*, a sweet wine made from raisins, and obtained from Seville. When he got a little better he ate, in spite of all remonstrances, some raw oysters, upon which his faithful majordomo, Quixada, remarked despairingly to the secretary of state, "Surely kings imagine that their stomachs are not made like other men's."

"The mental emotion created by the intelligence of the death of queen Eleanor, his favourite sister, completely prostrated him, and for many days he lay in bed, sometimes tossing restlessly, sometimes unable to move for pain, eating very little, and sleeping still less. It was not until the end of the month, February, that he showed any symptoms of amendment, or was able to sit up; or to taste a dried herring from Burgos with a head of garlick; or to receive visitors. Luis de Avila was one of the first who presented himself; and the emperor was much the better for seeing him. From the death-bed scene at Talaverella (queen Eleanor's), their conversation passed to war and politics, when the emperor, recurring to the loss of Calais, said that he regretted it like death itself.

"Under a course of sarsaparilla, and an infusion of liquorice, the emperor's health improved, as the genial spring weather came on. But his attack of gout had shaken him considerably, and for many weeks painful twinges were apt to revisit his arms and knees (p. 152).

"Notwithstanding that the emperor had ostensibly retired from the world to end his days in peace and religious observances, he was still as much oppressed with the cares of state as if he still occupied the throne. He was much distressed at the fall of Ciudadella, but in this instance his anxiety made him forget his ailments; 'and such was his eagerness for news that he gave orders to be called at whatever hour of the night a courier should arrive from the Mediterranean.'"

"During the spring of 1558, the emperor's health recovered from its winter's decline. At the end of March, Dr. Mathisio, in his usual solemn style, informed the secretary of state that he considered his majesty well enough to leave off his sarsaparilla and liquorice-

water. In May he was living as usual, and eating voraciously. His dinner began with a large dish of cherries or of strawberries, smothered with cream and sugar; then came a highly-seasoned pastry; and next the principal dish of the repast, which was frequently a ham, or some preparation of rashers, the emperor being very fond of the staple product of bacon-curing Estremadura. 'His majesty,' said the doctor, 'considers himself in very good health, and will not hear of changing his diet or mode of living, trusting too much to the force of habit, and to the strength of his constitution, which in bodies full of bad humours, like his, frequently breaks down suddenly, and without warning.' His hands occasionally troubled him, and his fingers were sometimes ulcerated. But his chief complaint was the heat and itching in his legs at night, which he endeavoured to relieve by sleeping with them uncovered; a measure whereby temporary ease was purchased at the expense of a chill, which crept into the upper parts of his body in spite of blankets and eider-down quilts. Later in the summer, he had some threatenings of gout, and his appetite diminished so much that he sometimes lived for days on bread and conserves. . . . It was not until August 9th, that the physician became seriously alarmed about the state of his patient. To cure the uneasy sensations in his legs at night, Charles had had recourse to bathing, by way of a repellant, regardless of the remonstrances of Mathisio. 'I would rather,' he said, 'have a slight fever, than suffer this perpetual itching.' In vain the doctor observed that men were not allowed to choose their own maladies, and that some worse evil might happen to him if he used so dangerous a remedy. The repellant system did not answer, the patient's legs continuing to itch, and his throat being choked with phlegm.* Still he was able to attend to business, and

* It may be some apology for Charles when we remember that the illustrious Harvey, the discoverer of the circulation of the blood, met with his death by standing in cold water up to his knees, to relieve the pangs of a fit of gout.

sufficiently alive to minor matters to be much annoyed at a frost which killed some melons of a peculiarly choice kind, that were ripening for his table. On August 16th and 17th, he was seized with violent purgings and with pain in the head, which bore a suspicious resemblance to gout. But as these symptoms soon subsided, he was supposed to have caught cold by sleeping, as the nights were getting cold, with open doors and windows. . . . At this time he performed his own funeral service, persisting that 'it would be good for his soul.' The funeral rites ended, the emperor dined in his western alcove. He ate little, but he remained for the greater part of the afternoon, sitting in the open air, and basking in the sun, which, as it descended to the horizon, beat strongly on the white wall. Finding a violent pain in his head, he returned to his chamber, and lay down. Next morning he was somewhat better, and was able to get up and go to mass, but still felt oppressed, and complained much of thirst."

Mr. Stirling records the most minute particulars of the emperor's last illness, which commenced on the 31st of August, and terminated on the 21st of September. "On the 1st of September he felt feverish and ill. On the 2nd, he awoke, complaining of violent thirst, and attempted to relieve it by drinking barley-water and sugar. During the day he dozed at intervals, and towards the afternoon his mind was observed to wander. At half-past eight, the physician took from him nine or ten ounces of very black, bad blood, which afforded considerable relief. Quixada, his majordomo, begged leave to send for more doctors; the patient said he did not like to have many of them about him; but he at last agreed that Cornelio might be called in from Cigales. On the 3rd he awoke refreshed, and altogether rather better; at eleven he took some refreshment, and drank some wine and water, and a little beer. In the afternoon he was again bled in the head. On the 4th, the pain had again left the emperor's head, but the fever still ran high. He regretted that more blood had not been taken from him, feeling too full of it; an

opinion from which the doctors dissented. During the whole day he was very restless. He had stripped off the jacket, under-waistcoat, and drawers, which he usually wore in bed, and lay tossing in his shirt under a single silken coverlet, and he insisted on the door and windows of his room being kept open. He complained bitterly of thirst, which the permitted syrup, vinegar and manna, seemed to aggravate rather than to allay; and the doctors were obliged to allow him nine ounces of his favourite beer, which he drank eagerly, with apparent relief. On the 5th, Dr. Mathisio administered to the emperor a strong dose of rhubarb in three pills. He felt much better from this medicine. On the 6th, he was worse again, very feverish all day, and in the afternoon delirious; but in the evening he was easier, and again sensible. On the 7th no change. On the 8th, Dr. Cornelio arrived. The emperor was neither better nor worse; Dr. Mathisio stated the fact in a very long letter, which ended with the remark that the fever was not in itself dangerous, and might even prove beneficial, but that, the constitution of the patient considered, the result must be regarded with much doubt and apprehension. September 9th, the emperor remained as before. On the 10th, he was somewhat easier, although very weak, and able to take no nourishment except a few spoonfuls of mutton-broth. September 11th: a crisis in the fever had been looked for on this day; and the doctors were of opinion that it was changing into what they called a double tertian. The 12th, the patient had passed a better night, and was able to take some food, and hopes of recovery began to be entertained.

“On the 14th of September these hopes failed. He was decidedly worse. Nothing would remain on his stomach, and his weakness and the state of his pulse greatly alarmed his two physicians. His throat was constantly choked with phlegm, which, being too feeble to expectorate, he endeavoured to remove with his finger.”

“September 15th. Rhubarb pills had been again administered with good effect, and hope is not yet

extinguished. But," adds Quixada, "you can hardly imagine how weak his majesty is. We all of us do our best to anticipate his wants ; and if our blood would do him good, we would give it most joyfully."

"September 16th. The doctors considered him in a slight degree better."

"On the 17th Mathisio wrote that the emperor had been seized with ague fits, and cold fits lasting much longer than the hot ; that he vomited frequently and violently, 'after which his majesty lies unable to speak or move, and does not even ask for water to wash his mouth.'"

"September 18th. 'The emperor,' wrote Mathisio, 'touched nothing to-day but a little chicken broth, and a little watered wine; the phlegm in his throat was very troublesome.'"

"September 19th. Mathisio announced that the hot and cold fits continued with great violence, and that his pulse was getting feebler and feebler."

"On the 20th. During the whole night he had been attended by his confessor, and by the preacher Villalva, who frequently read aloud at his request passages from Scripture, usually from the psalms. The psalm which he liked best was that beginning, *Domine ! refugium factum est nobis*—'Lord ! thou hast been our refuge.'—Psalm xc. of our version. The emperor asked for the eucharist. Fray Juan de Regla reminded him that after having received extreme unction (which he had done) that sacrament was no longer necessary. 'It may not be necessary,' said the dying man, 'but it is good company on so long a journey.' About seven in the morning, therefore, the consecrated wafer was brought from the high altar of the church, followed by the friars in solemn procession. The patient received it with great devoutness from the hands of his confessor; but he had great difficulty in swallowing the sacred morsel, and afterwards opened his mouth, and made Quixada see if it had all gone down. He was soon, however, seized with violent vomitings; and during the greater part of the day lay motionless, with closed eyes, but not unconscious of what went on around him."

“About noon, the archbishop of Toledo, Carranza, arrived, and was immediately admitted to the sick room, when he was recognised by the patient, who addressed a few words to him, and told him to go and repose himself. The count of Oropesa and his brother, Don Francisco, also came. In the afternoon it was supposed that the emperor’s strength was ebbing fast, and all his friends assembled at the palace. They found him perfectly calm and collected, for which he expressed great thankfulness, it having long been his dread that he might die out of his mind.”

“Towards eight o’clock in the evening, Charles asked if the consecrated tapers were ready; and he was evidently sinking rapidly. The physicians acknowledged that the case was past their skill, and that all hope was over. Cornelio retired; Mathisio remained by the bedside, occasionally feeling the patient’s pulse, and whispering to the group of anxious spectators,—‘His majesty has but two hours to live—but one hour—but half-an-hour.’ Charles meanwhile lay in a stupor, seemingly unconscious, but now and then mumbling a prayer, and turning his eyes to heaven. At length he raised himself, and called for ‘William.’ Van Male was instantly at his side, and understood that he wished to be turned in bed, during which operation the emperor leaned upon him heavily, and uttered a groan of agony. The physician now looked towards the door, and said to the archbishop, who was standing in its shadow, ‘*Domine jam moritur!*’ My lord, he is now dying! The primate came forward with the chaplain, Villalva, to whom he made a sign to speak. It was now nearly two o’clock on the morning of the 21st of September, St. Matthew’s day. Addressing the dying man, the favourite preacher told him how blessed a privilege he enjoyed in having been born on the feast of St. Matthias the apostle. . . . For some time the preacher held forth in this pious and edifying strain. At last the emperor interposed, saying, ‘The time is come; bring me the candles and the crucifix.’ These were cherished relics, which he

had long kept in reserve for this supreme hour. The one was a taper from Our Lady's shrine at Monserrat, the other a crucifix, of beautiful workmanship, which had been taken from the dead hand of his wife at Toledo, and which afterwards comforted the last moments of his son at the Escorial. He received them eagerly from the archbishop, and taking one in each hand, for some moments he silently contemplated the figure of the Saviour, and then clasped it to his bosom. Those who stood nearest to the bed now heard him say quickly, as if replying to a call, '*Ya, voy, Senor,*'—Now, Lord, I go. As his strength failed, his fingers relaxed their hold of the crucifix, which the primate thereupon took, and held it up before him. A few moments of death wrestle between soul and body followed; after which, with his eyes fixed on the cross, and with a voice loud enough to be heard outside the room, he cried, '*Ay, Jesus!*' and expired."

The reader of the history from which I have so largely drawn,—Mr. Stirling's admirable narrative,—will scarcely fail to infer that the gout of this great soldier, statesman, and sovereign was not really exceptional in kind; and that the home-life of other illustrious "martyrs" to the malady, if equally well known to us, would exhibit characters essentially the same. The gout of Horace is invested with a charm, the gout of Chatham with a dignity, which is in each case the veil thrown by the genius of the patient over his habits of self-indulgence; and the true lesson to be learned from their sufferings is, that great men have no immunity from the weaknesses of their kind; and that they cannot transgress the laws of nature without paying the bitter physical penalties which those laws ordain. "Every such contingency," to use the words of Jeremy Taylor, "doth preach our funeral sermon, and calls us to look and see how the old sexton, Time, throws up the earth, and digs a grave where we must lay our sins or our sorrows." The gout of the humble is no less a reality than that of the great; and mankind, as regards their bodily ills, are all inmates of the same hospital, and all patients of the same Great Physician.

Since, then, the phenomena of gout have in all ages been much the same in general character, and mainly dependant upon similar conditions, the disease has afforded less scope than many others for ingenious or varied nomenclature; and the earliest names assigned to it have held their ground even to our own time. By Hippocrates it was called generically *arthritis*, and as affecting chiefly the feet, *podagra*; names that have the advantage of being simply descriptive. Some of the Greek authors carried the same principle into farther detail. Cœlius Aurelianus (lib. v., cap. 2) applies the word *podagra* to gout of the feet; and distinguishes it from *chiragra*, or gout of the hands; *pechyagra*, of the elbow; *gonagra*, of the knee; *dentagra*, of the teeth; *cleisagra*, of the articulations of the clavicles; *omagra*, of the articulations of the humerus; *rachisagra*, of the spine; and *tenontagra*, of the large tendons. In the middle ages a belief in the aristocratic character of gout has so far taken root that the disease was called *morbus dominorum*; and soon afterwards *gutta*, the trivial name which in most languages it has since retained. The origin of this seems to have been the discovery of the urate of soda deposit, and the consequent belief that gout was caused by a drop of some peccant humour falling into the joints.

In modern times it has not been customary to christen gout according to its seat; but still a good many adjectives have been used to denote its various peculiarities. It has been described as *acute*, *chronic*, *regular*, *irregular*, *inflammatory*, *sthenic*, *asthenic*, *nervous*, *atonic*, *anomalous*, *wandering*, *suppressed*, *retrocedent*, and by many analogous words. Of these most are unnecessary, and some misleading. Acute gout is perhaps sufficiently descriptive of an active form of disease; but chronicity refers only to time, and conveys no idea of any particular degree of severity. The words *sthenic* and *asthenic*, signifying the presence or absence of power or force, are perhaps the least objectionable of the more general terms in use; and having been originated by Galen, and subsequently adopted by the Brunonians, they can claim both modern sanction and venerable prescription.

In the following pages I purpose to employ them for the two chief types of the disease; and to comprise under the head of "irregular gout" all the various forms that depart in some direction or other from the ordinary and familiar standard. It is probable that the same division might be applied advantageously to the phenomena of rheumatism.

Concerning the nature and causes of gout there has been a very general harmony of opinion among the public, and an almost equal dissimilarity in the ranks of the profession. The outward causes are indeed often plain to the most unscientific observer; and humoral pathology is engrafted upon the public mind in the nursery. The proposition that idleness and over-feeding vitiate the blood, and produce disease, is one which commends itself to the capacity and the prejudices of the free-born Briton; and which he accepts at once as a sufficient explanation either of gout or any other fleshly ill. In the medical profession, however, the doctrines of a purely humoral pathology have prevailed only fitfully; and even when they were in the ascendant, those who held them must always have perceived that they left something unexplained. In all ages, therefore, medical writers have sought to arrive at more exact conceptions of the pathology of gout than a merely barren humoralism would afford. They have felt that it was necessary to find some connecting link between the assumed cause and the obvious effect, in order to explain how the vitiation of the fluids could produce the symptoms that were described.

In this quest, a large number of authors have erred from want of adequate comprehensiveness of view. They have seized upon some symptom, lesion, or complication, to which their attention had been particularly directed by events; and have set this up as the central figure of, in many cases, a highly ingenious composition. Their pupils and followers have soon found that the composition neither accounted for all the phenomena, nor represented the infinite variety of nature; and they in their turn have sought to improve upon it by replacing the central figure by another. It is highly

probable that many such writers may have been simply misled by generalizing from insufficient experience : that the forms of gout most frequently under their observation were such as to justify their conclusions, and that they chiefly erred in thinking their own experience co-extensive with the facts. But again, it is not improbable that the facts they wished to observe loomed large before their perceptions, magnified by the influence of attention, and that other facts, which were opposed to their views, would fall easily into comparative shadow. The philosopher who loves truth better than his system is not an every-day character; and perhaps it is best for the progress of science that he is not. Much earnest work would have been lost to us if all inquirers had been swayed by a profound and cold impartiality; and many discoveries fruitful of good have been the indirect results of the desire of the human mind to establish the system which it had once enunciated.

It would be impossible, within the allotted limits of these pages, to give any complete account of the theories of gout, which have been advanced even in modern times; and the task, even if achieved, would be infinitely unprofitable. But there have been a few men, leaders of thought in their respective generations, to whose teaching it seems desirable briefly to refer.

To Sydenham, who has been called the modern Hippocrates, and the father of English medicine, we are indebted for an admirable treatise on gout, the fruit of thirty-four years' personal experience of the malady. He, in common with his medical predecessors and contemporaries (he died in 1689, at the age of 65,) was a believer in the doctrines of humoral pathology. He confesses at the commencement of his work that it may fall short of the expectations of some of his readers; but adds that he will, notwithstanding, faithfully deliver the remarks he has hitherto made concerning the difficulties and intricacies respectively occurring in the history of the disease and the method of cure : *leaving the illustration thereof to time, the*

discoverer of the truth. He consoles himself with (perhaps questionable) philosophy in remarking, "But it is a consolation to me, and may be so to other gouty persons of small fortunes and slender abilities, that kings, princes, generals, admirals, philosophers, and several other great men have thus lived and died. In short, it may, in a more especial manner, be affirmed of this disease that it destroys more rich than poor persons, and more wise men than fools; which seems to demonstrate the justice and strict impartiality of Providence, who abundantly supplies those that want some of the conveniences of life with other advantages, and tempers its profusion to others with equal mixture of evil; so that it appears to be universally and absolutely decreed that no man shall enjoy unmixed happiness or misery, but experience both."

As regards the description of manifest symptoms, Sydenham has left us an account of gout that could hardly be surpassed. But in his day animal chemistry was an unknown science, and although he entertained the belief that the disease was caused by some morbid material in the blood, he had no conception of the nature of this material or of the sources from which it was drawn. The discovery by Dr. Wollaston of the presence of an excess of urea in gouty blood, and the subsequent discovery by Dr. Garrod that this urea exists in combination with soda, have served to substantiate the belief entertained by the humoral pathologists, and have forced us to retrace our steps, and to treat with more becoming reverence their opinions, vague as they were. Sydenham was one amongst their number, and to a great extent his prophecy has been fulfilled: "that time, the discoverer of truth, will illustrate the nature and history of gout."

Sydenham remarks, "Upon a thorough attention to the various symptoms of this disease, I judge it to proceed from a *weakened concoction* both of the *solids* and *fluids*; for such as are subject to it, being either worn out by old age, or having *hastened this period* of life by their debaucheries, labour under an universal paucity of animal spirits occasioned by the immoderate

use of the vigorous function in the heat of youth. For instance, by a too early or excessive use of venery, by the vast and continued pains they take to gratify their passions, and the like; whereto must be added *the quitting of such bodily exercises of a sudden*, as they had formerly used (whether through age or idleness) which served to invigorate the blood, and strengthen the tone of the solids; whence the strength decays, and the concoctions are no longer duly performed, but on the contrary the excrementitious part of the juices, which was formerly expelled by means of such exercise, *lies concealed in the vessels* to feed the disease. And sometimes the disease has been increased by a long-continued application to some serious study, whereby the finer and more *volatile spirits* are called off from their proper function of assisting the concoction."

No one can read the foregoing passage by the light of modern physiology and pathology, without being struck with the acuteness of the author's perception when engaged in tracing the origin of the malady. He starts by saying that owing to a "*weakened concoction*" of the solids and fluids, the individuals who are predisposed to gout become liable to be attacked by it. At the present time we should say that a person whose digestion had become impaired, and who had for a longer or shorter time suffered from dyspepsia,—resulting in a mal-assimilation of his food, and an insufficient oxidization and decarbonization of his blood, would exhibit a deficiency in the amount of fibrin and red corpuscles in this fluid, and that the various tissues of his body, the muscular more perceptibly, would give evidence of the deterioration produced in them. His adipose tissue would be increased at the expense of muscular fibre, as one of the results of an impaired digestive function. The "*quitting of bodily exercises of a sudden*" would be explained by the failure of power that would ensue from defective oxidization and decarbonization of the *solids* and *fluids* of the system, and the abandonment of those exercises which "formerly served to invigorate the blood and strengthen the tone of the solids," would hasten the decay of the body. To say that "the

excrementitious part of the juices which were formerly expelled by exercise now lies concealed in the vessels to feed the disease," is but to describe diminished action of the skin and kidneys, and defects existing in the other secreting organs of the body, which for the want of the due stimulus (of exertion) would be rendered prone to suffer from congestion, and to undergo alterations in their structure. The observation that, "A long continued application to some serious study, whereby *the finer and more volatile spirits* are called off from their proper function of assisting the concoction," although couched in the somewhat involved language of the period, shows that Sydenham had at least a glimmering of a subtle influence which exercised a powerful control over the functions of the body, and which, in the present day, we speak of with increased brevity, but with no great gain in respect of clearness, under the name of "nervous influence."

Twenty-one years after the death of Sydenham was born William Cullen, who became Professor of Medicine in the University of Edinburgh, and whose teaching was destined to work no small change in the medical doctrines of his generation. The humoral pathology which had prevailed from the time of Hippocrates was shaken by the first steps towards the acquisition of knowledge about the anatomy and functions of nerves. The ancients had confounded tendons and ligaments with nerves under the common name of *partes nervosæ*; and the confusion has left its traces even upon modern language. To this day we use the word "nervous" in two opposite senses, to signify either strength and energy, or timidity and weakness.

The earliest discoveries with regard to the office of the nerves, properly so called, in producing sensation and motion, paved the way for their advancement to a more conspicuous place in the received doctrines about the causation or control of disease. Cullen was the first writer of mark who gave shape to the change of view which in later times has been to some extent confirmed by the researches of physiologists. But unfortunately Cullen was not exempt from the common error of

seeking to carry a new doctrine beyond the limits of the facts on which it rests; and he strove to exalt the "nervous influence" at the expense of every other, and to establish it as the dominating power in the production of gout and many other diseases.

He failed to perceive the reciprocal influences of the nervous system and the blood; and almost omitted the latter great principle of life from any share in his scheme of pathology. He says of gout, that "it is a disease of the whole system, and depends upon a certain general conformation and state of the body; but the general state of the system depends chiefly upon the state of its *primary moving powers*, and therefore the gout may be supposed to be chiefly an affection of these; *hence, manifestly an affection of the nervous system, in which the primary moving power of the whole system is lodged.*" Dr. Willis, the translator of Sydenham, in annotating Cullen's opinions on gout, says, "it is clear that the doctor rejects, or at least throws great doubts upon, the generally received opinion that gout depends upon a certain morbid matter always present in the body, and by certain causes thrown upon the joints or other parts, producing the various symptoms belonging to the malady." It is perhaps natural for us to regret that Cullen, who must have been well acquainted with the doctrines of Sydenham, did not devote his great powers to an endeavour to harmonize them with his own, and to blend together the truths contained in each; but such a course, however desirable in the interests of truth, is not often followed in any department of inquiry. Descending to more recent times, it next becomes necessary to notice the views of Barthez, a celebrated French physician, whose "*Traité des Maladies Goutteuses*," was published in 1802. He considered that the production of the disease depended on two causes: "a particular disposition in the constitution to produce a specific gouty state both of the solids and fluids, and a weakness (natural or acquired) which the parts that are the seat of the disease suffer relatively to other organs."

Dr. Thomas Sutton, in his valuable Tracts on Gout,

published in 1813, expresses the opinion that "the symptoms attending gout give every reason to suppose that its principal and exciting cause resides in the alimentary canal;" and again, that "the action of purgatives, and their quick and decided effects in subduing a fit of the gout, might alone lead to the inference, if other proof were wanting, that the cause of gout resides in the alimentary canal."

Guilbert, another French author, who wrote in 1817, considers that gout arises from causes which have impaired the functions of digestion and perspiration, and have thus occasioned a condition of plethora, in which matter intended to be excreted has remained in the body. The lymphatics are choked (*engorgée*) by this matter, which becomes the active cause of gout.

The same year brings us to the doctrines of Sir Charles Scudamore, whose Treatise on the Nature and Cure of Gout, then first published, has ever since held a prominent place among English works upon the subject. This writer differs from Sydenham in many respects, and says that although, as an author, "he possessed great originality and exceeding merits, and appears himself to have been the model of a virtuous physician, yet his doctrines upon gout, which were conceived in the full force of the humoral pathology, have had, even to the present day, a most injurious influence upon practice." Sir Charles, however, does not inform his readers in what way this injurious influence has been exerted. He differs also from Cullen in his nosological arrangement, although to a certain extent his disciple, with regard to the influence exerted by the nervous system. His definition of gout is that it is a constitutional disease, producing an external local inflammation of a specific kind, the susceptibility to it often depending on hereditary bodily conformation and constitution, but being in many instances wholly acquired; affecting chiefly the male sex, and particularly persons of capacious chest and plethoric habits.

Dr. Parry, in 1825, in his work on Pathology and Therapeutics, expressed his belief that gout is a disease depending on certain conditions of the circulating

system, and offers it as one of the examples of salutary processes. He speaks of "the first cause of the malady being merely the correction of the irregularly directed circulation;" and, further of the paroxysm as being a mode of "the evacuation of the habit, and the consequent reduction of a plethora which is relatively excessive; and that another end is the restoration of the due balance of circulation; previously determined in excess towards other and more vital parts."

The late Mr. Anthony White, surgeon to the Westminster Hospital, and a president of the Royal College of Surgeons, wrote a short Treatise on Gout in 1848, which is remarkable for the simplicity of the views that it enunciates. In his treatise he says that he had been a sufferer from gout over a period of forty years. He was the offspring of parents both of whom were constantly the subjects of gout—a disease which was inherited by their four sons. Two of the latter (twins) died at the respective ages of forty-five and forty-six worn out by reiterated attacks of the malady. For himself, sharing largely in the family predisposition, he very early in life began to exhibit signs of latent gout, shown in the ready conversion of common nutriment into acrid acidity; and amongst his earliest recollections are his mother's repeated administrations to him of magnesia and alkaline preparations to remedy the heartburn, with which he was perpetually tormented. About the age of sixteen, a fixed aching pain occupied the middle flexor tendon of his right hand, near the root of the finger, preventing its flexure. In the course of a week or two the pain in the finger suddenly ceased, and was almost instantly succeeded by a severe attack of gout in the large joint of the great toe, ushered in by all the usual precursory symptoms. The subsequent visitations of the disease extended over a period of forty years, during which time it successively affected every tissue of his body. Mr. White then continues, "Hence I have had abundant opportunity, not only to experiment upon the gout in my own person, as regards dietetics and therapeutics, but also to study its natural history under the least

ambiguous conditions, whenever, as not unfrequently happened, I allowed a paroxysm to run its course, and affect its cure. It was chiefly by noticing what took place under such circumstances that I was led to entertain those views which I shall presently lay before my reader."

Mr. White then acknowledges that he was much struck, on the very threshold of his inquiry into the true nature of gout, by the close affinity between the gouty and the lithic acid diathesis,—“an affinity so remarkable that a very general disposition prevails among medical writers to consider lithic acid as the true gouty poison, and to impute its presence in the system to the impaired action of the kidneys.” He combats this latter notion by stating, “the arguments adduced in support of it appear to me to be based on a singular misapprehension of patent facts. The discharge of lithic acid and its salts in the urine is a salutary process; and while the kidneys are actively performing such a process, it is strange, indeed, to charge them with creating the offensive matter they only serve to remove. It is not from the presence of lithic acid sediments in the urine of the gouty, but from their absence, that we should be warranted in ascribing to defective action of the kidneys the accumulation of that excrementitious matter in the system. If the blood was manifestly surcharged with lithic salts or their equivalents, while none such escaped in the urine, then, indeed, we should have reached the end of our enquiry in full assurance that the kidneys were the very matrices of gout. But it is not so in reality: and the most we can venture to assert is, that the renal functions, in common with others, are secondarily affected by the cause, whatever it be, of the gouty diathesis.” Mr. White then proceeds to give his own theory of the cause of gout, and “recommends it to the candid examination of my professional brethren.”

He writes, “Having endured innumerable visitations of gout, and having had recourse to a variety of medicaments, some of which were fearfully destructive to

my general health, I at last set about watching attentively the method which nature herself adopts for the cure of this disease. Thus it frequently happened during my forty years' conflict with my hereditary malady, that I submitted to the old plan of patience and flannel, leaving the disorder to run its course, and wear itself out by its own violence. On several of these occasions I was attacked with sickness and vomiting, accompanied by acrid bilious discharges from the bowels; and these evacuations were followed by immediate relief as to every local and constitutional symptom. Sometimes the result was an entire cessation of the paroxysm; at other times the alleviation was more partial; but repeated experience convinced me that the degree of relief obtained was always proportioned to the copiousness of the bilious evacuation. Pursuing this hint given me by Nature, when the spontaneous diarrhœa has been too scanty I have assisted it with five grains of calomel. These in a few hours produced copious bilious discharges; the gout departed, and I was well again."

"The conclusion forced upon my mind by these facts, recurring again and again during a period of so many years, is, that not to the stomach, or the kidneys, or to the impaired functions of any other viscus than the liver, is the cause of gout ascribable."

The two most recent writers on gout are Dr. William Gairdner and Dr. Alfred Baring Garrod. Like their predecessors, they differ very materially in their views of the pathology of the disease, Dr. Gairdner believing that it is essentially due to venous congestion; and Dr. Garrod to the presence of urate of soda in the blood.

Dr. Gairdner observes, at page 175 of the fourth edition of his Treatise on Gout: "Venous congestion, then, I consider the first condition essential to the formation of the gouty diathesis. It is no new observation; it may be found interspersed through the writings of all former authors. Even those who adopt explanations inconsistent with such a state of things, notwithstanding admit it. This state of the blood was first clearly announced as the great cause of gout by Galen, whose

opinions have continued to influence the minds of succeeding physicians, in a greater or less degree to the present day. The truth of the fact being, I imagine, unquestionable, it will continue to embarrass the doctrines of those who advocate opinions with which it is incompatible."

Dr. Gairdner explains the theory he advocates by stating, "that the great venous canals of the body, as well as the larger arterial vessels, are endowed with a resistency which enables them to struggle well against the flood of returning blood. This fluid then is compressed between two opposing forces: that, namely, which is derived from the heart and arterial systems, urging it forward in its course, and, on the other hand, the antagonistic resistance of the great veins leading to the right auricle. Under this compression I believe that the vessels give way, and a true hæmorrhage is occasioned in the part affected. If the rupture take place in a minute capillary carrying the serous portion of the blood only, œdema is the consequence, but if the burst vessel be one carrying red blood, a true ecchymosis is formed."

Dr. Gairdner confesses that this view of the cause of gout may startle many persons by its originality, but he is not the less a firm believer in its truth. He contends and with reason, that distended capillaries are the real seat and cause of the painful phenomena of gout, and that such vessels when dilated so as to admit fluids for which they were not intended, and bound down by the firm fascia in which gout has its usual seat, give rise to the suffering.

Dr. Garrod has most satisfactorily established the fact, that in persons possessing a gouty diathesis there exists an excess of urea—in the form of urate of soda—in the blood. The urea itself was first detected by the late Dr. Wollaston, in 1797, but the exact nature of the compound containing it was left to be discovered by Dr. Garrod.

Dr. Garrod, in announcing his views at page 316 of his work on Gout and Rheumatic Gout, says, "In the Medico-Chirurgical Transactions for 1848, I ventured

to advance the following guarded opinion, derived from several observations on the conditions of the blood and urine in gout, rheumatism, and albuminuria. 'The results of these experiments on the condition of the blood and urine prove that uric acid is not a product of the action of the kidneys, as frequently supposed, but is merely secreted from the system by these organs. They also appear to indicate that the excreting function of the kidneys with regard to the solid portion of the urine is not a simple one, but that urea and uric acid are separately eliminated; also that one of these functions may be impaired or destroyed, the other remaining entire. It appears also probable that, as in albuminuria, the *urea-excreting* function being chiefly impaired, we find a vicarious discharge of urea in dropsical effusions; so in gout, the uric acid excreting function being defective chalk-like deposits are produced by a similar vicarious discharge of urate of soda.'

" 'Gout would thus appear at least partly to depend on a loss of power (temporary or permanent) of the uric acid excreting function of the kidneys; the premonitory symptoms, and those also which constitute the paroxysm, arising from an excess of this acid in the blood, and the effort to expel the *materies morbi* from the system. Any undue formation of this compound would favour the occurrence of the disease; and hence the connection between gout and uric acid, gravel and calculi; and also the influence of high living, wine, porter, want of exercise, etc., in inducing it.'

" 'This hypothesis also explains two facts, which have been regarded as militating against its humoral pathology; namely, the hereditary nature of the affection, and its frequent occurrence in low states of the system; for we can understand that the peculiarity of the kidney, with reference to the excretion of the uric acid, may be transmitted, and likewise that when the function in question is permanently injured, it will not require an excessive formation of this acid to cause its accumulation in the blood.'

Dr. Garrod then lays down the following series of propositions to substantiate his views; and to these I shall have occasion to revert hereafter.

"*First*, in true gout, uric acid in the form of urate of soda, is invariably present in the blood in abnormal quantities, both prior to and at the period of seizure, and is essential to its production; but this acid may occasionally exist largely in the circulating fluid without the development of inflammatory symptoms; as for example, in cases of lead poisoning and a few other instances. Its mere presence, therefore, does not explain the occurrence of the gouty paroxysm.

"*Secondly*, the investigations recently made in the morbid anatomy of gout, prove incontestibly, that true gouty inflammation is *always* accompanied with a deposition of urate of soda in the inflamed part.

"*Thirdly*, the deposit is crystalline and interstitial; and when once the cartilages and ligamentous structures become infiltrated, such deposition remains for a lengthened time, perhaps during life.

"*Fourthly*, the deposited urate of soda may be looked upon as the cause, and not the effect, of the gouty inflammation.

"*Fifthly*, the inflammation which occurs in the gouty paroxysm tends to the destruction of the urate of soda in the blood of the inflamed part, and consequently of the system generally.

"*Sixthly*, the kidneys are implicated in gout, probably in its early and certainly in its chronic stages; and the renal affection, perhaps only functional at first, subsequently becomes structural; the urinary secretion is also altered in composition.

"*Seventhly*, the impure state of the blood, arising principally from the presence of urate of soda, is the probable cause of the disturbance which precedes the seizure, and many of the anomalous symptoms to which gouty subjects are liable.

"*Eighthly*, the causes which predispose to gout, independently of those connected with individual peculiarity, are either such as produce an increased formation of uric acid in the system, or which lead to its retention in the blood.

"*Ninthly*, the causes exciting a gouty fit are those which induce a less alkaline condition of the blood, or

which greatly augment for the time the formation of uric acid, or such as temporarily check the eliminating power of the kidneys.

“*Tenthly*, in no disease but true gout is there a deposition of urate of soda in the inflamed tissues.”

The foregoing *résumé* of the opinions upon the pathology of gout that have been held by the most experienced and skilful practitioners over a term of about two centuries, seems to me to explain and justify the addition of another volume to those that have been already written upon the subject. I purpose to refrain from the expression of my own pathological views and from any extended criticisms of the views of others, until after the conclusion of the chapters devoted to the description of the various occurrences which characterize the disease; but I may in this place remark, that the writers whom I have quoted appear to me to have been mainly led into error, or more properly, into erroneous limitation of doctrine, by too exclusive attention to some single class of phenomena. Perhaps Sydenham, especially when we regard the standard of knowledge of his time, is least of all liable to this imputation in so far as it implies an intellectual fault; and it would not be too much to say that Mr. White is of all most liable to it. But the sum of the whole seems to be that the literature of gout may serve to recall one of Lord Macaulay's most striking images. He said of a book professing to be a history, that it bore to true history the sort of relation that a Turkey carpet bears to a picture. In both there is a surface variously coloured; and there are tints and elements in the carpet which would form a picture if they were differently arranged.

I hope to show in the sequel that the elements of a true pathology of gout, and of a rational preventive and curative treatment, are abundantly ready to our hands; and that little but combination and arrangement are needed to educe homogeneity of effect. The difficulties that impede the cure of gout are due rather to the imperfections of human nature than to those of medical science. The disease springs mainly from

habits to which people cling because they know them to be agreeable or fancy them to be necessary; and until men will learn to take proper care of their bodies (which will only be when they learn to take proper care of their souls) they will suffer for their own pleasant vices, will still seek temporary relief from poisonous remedies, and will still fling at the medical profession the reproach which is older than Ovid, and which, all unjust though it be, no earlier or later writer has expressed more tersely or more clearly:—

“Tollere nodosam nescit medicinæ podagram.”

CHAPTER II.

DESCRIPTIVE.

IT may almost be said that the facts of gout have been spiritualized by fiction; and that the peer in the first picture of *Mariage à la Mode* forms no inapt representation of the popular idea of a gouty man. A fine presence, a stately bearing, a foot swathed in flannel, and a suspected proneness to paroxysms of torment in the still watches of the night,—such are the chief elements of the disease in the imaginations of those who have neither suffered from it nor closely observed it. In truth, however, most of these elements are more or less accidental; and the malady, when stript of adventitious colouring, presents a very different character. Although there are certain types of formation which seem to involve a proclivity to some of the more conspicuous forms of gout, and which have therefore an evil reputation as indications of special liability to the malady—the results of extended observation show that such types have been unfairly judged, and that many others are at least equally exposed to analogous forms of suffering. The robust habit of body, the fair skin, the ruddy complexion, the blue eye, and the hair that turns early grey, are often found in connection with obvious varieties of gout: but varieties which, if less

obvious, are not more doubtful, are constantly found in persons of totally different conformation. Much stress has been laid by some writers upon the hereditary nature of gout; and it is at least true that it has often been manifested in successive generations. But instances are not wanting, nay, they are rather numerous, in which the victims of so-called inherited gout have rendered themselves free from their enemy by appropriate and careful regimen; and it may very fairly be questioned whether the presumed inheritance is not in fact an inheritance of habits rather than of diathesis. Van Swieten mentions the case of a priest, who possessed a rich benefice, and had been a long and continual sufferer from gout. He was taken prisoner by Barbary pirates, and was kept constantly at work in the galleys for two years; a change which had this good effect—that afterwards, when he was ransomed from his captivity, having lost all his corpulence, he never again was attacked by the disease. Perhaps the only constant antecedent of gout is dyspepsia; and even this, although generally very manifest, is sometimes so slight as to attract but little attention from the unobservant. As a rule, however, it is well marked; and although its precise form will vary according to habits and locality, yet it is almost always associated with heartburn, acidity, and eructations. These symptoms may manifest themselves in different degrees of severity, and for different periods of time, before they are followed by any others of a more definite character. In some cases, also, the first attack of gout will be preceded by premonitory warnings of various kinds, some of which are common, others peculiar to certain constitutions and idiosyncracies. In one patient there will be unnatural depression of spirits and irritability of temper; in another unnatural joviality. The urinary organs are especially prone to give warning of the coming storm. In nearly all cases the urine will be highly acid and loaded with saline matters; and these qualities may render it so irritating that it produces painful or difficult micturition, sometimes attended by urethral discharge. The nervous

system often gives evidence of its share in the general disturbance by various anomalous sensations—by local pains, or by itching and tingling of the skin. When such symptoms, or some of them, have endured for an uncertain time, and often after a period of sudden aggravation of them, they usher in the paroxysm that declares an attack of gout.

The paroxysm itself usually commences in the middle of the night, or towards morning; the patient being awakened from sleep by severe pain in the part affected, which in most cases is the ball of the great toe. The pain increases steadily for some hours, and the member becomes hot, swollen, reddened on the surface, and its superficial veins distended. There is also general heat of skin, quickness of pulse, and feverish restlessness. After five or six hours the pains frequently abate somewhat, the heat of the skin is relieved by perspiration, and a short sleep may be obtained. In all but the most severe cases there is some remission of the symptoms every day, and an exacerbation at night, and the ordinary duration of the attack is from three days to ten or more. The pain and inflammation first subside, commonly with desquamation of the cuticle, and the swelling remains for a short time longer, accompanied in most cases by much muscular weakness of the part.

While these local symptoms have been in full activity, there will have been others of a more general kind, showing a very complete sympathy with the attack, or more correctly, a participation in it, on the part of the system at large. The digestive and excretory functions are disordered, the tongue either much coated or else showing signs of active irritation, the evacuations morbid. The urine is commonly loaded with lithates; the stools are deficient in bile, clay-coloured, and offensive. Besides the want of rest which may be due to pain, there is also the sleeplessness of feverish excitement. The pulse is usually quickened, full, and hard; and the whole condition may be summed up as one of acute pyrexia, with gastric derangement, to which the local malady is superadded.

The passing away of the earlier acute attacks of gout, and especially of the first attack, is frequently attended by very considerable improvement in the health, spirits, and temper. The storm has been one of those that clear the air, and the clouds do not immediately return after the rain. If the first attack be utilized as a warning, and if its lessons are laid to heart, the calm may be of a very long duration, or may even remain unbroken during a long life. But men, as a rule, have neither the prudence nor the self-denial necessary for this purpose; and the liability to gout seems often to be accepted as a penalty from which there is no escape. Sooner or later dyspeptic and other premonitions show themselves; and these may even occasion so much discomfort that a fit of gout may be looked forward to almost with pleasure, as affording a door of temporary escape from maladies that are productive of continual annoyance.

In such instances, the escape is temporary indeed, and the acute attacks are separated by shorter and shorter intervals. Not only is this the case, but the territory invaded by each attack becomes more and more extensive, and the recovery from each less complete. The patient who at first occasionally had the gout, comes in time to be gouty; and the distinction implies more than is at first sight apparent. The parts attacked by acute inflammation are left stiff, tumid, weakened, and tender. The mobility of joints is impaired. The tissues become infiltrated with a secretion containing urate of soda; and as the more fluid parts of this secretion are absorbed, the urate of soda remains as the tophi, tophaceous deposit or chalkstone. In this state it mechanically impedes movement, occasions pain by pressure, and often leads to troublesome and obstinate ulceration. The attacks of gout cease to be periods of acute illness separated by periods of recovery, and become only occasional exacerbations of a chronic condition. There is always gout enough in the system to be roused into activity by the occurrence of favourable conditions; and these may be either corporeal or

mental. Indiscretions in diet, changes of temperature, unusual exertion, painful or even pleasurable emotion, all serve to render the gouty man prostrate for a season; and there is no more painful incident of the disease, than the incapacity it entails at critical times, when the affairs of life require prompt decision or immediate action. Partly from wearing pain, partly from the effect of chronic malaise upon vital organs, partly from the influence of impaired excretion upon the blood or the solids, the constant recurrence of gout saps the very springs of life. There is no greater error in the popular picture of gout, than the belief that it is associated with, or even conducive to, longevity. There are a few gouty men, originally of powerful frame, and who have been sheltered during their lives from many of the causes of disease, who struggle against gout, and whom it fails to kill. And these men often experience much relief after an attack. The rest, the medication, and the judicious feeding, then enforced under advice, all tend to remove many of their ordinary sufferings. And just as Paley said from bitter experience, that there was no pleasure equal to the cessation of agonizing pain, so the patient who experiences a brief renewal of health after a gouty paroxysm, will thoroughly appreciate the boon, and will often refer his improvement to the gout itself rather than to the regimen and the medicine which the gout required. As a rule, gout tends slowly towards a fatal issue; and there can be no reasonable doubt that it shortens life, even in those who fight against it is the most stubborn and the most prolonged. It is even true that the disease is on the increase both as regards its prevalence and fatality; although it seems probable that its outward characters have in some degree changed. I have obtained particulars of the mortality from gout in England and Wales for the ten years from 1859 to 1868, inclusive; and they are set forth in the following table, from which it appears that the proportionate as well as the actual number of deaths steadily increases, and was half as large again at the end of the decade as at the beginning.

Mortality from gout in England and Wales.

Year	Number of Deaths registered.	Ratio per million of the population, corrected for estimated increase.
1859	238	12
1860	268	14
1861	247	12
1862	284	14
1863	248	12
1864	309	15
1865	361	17
1866	359	17
1867	377	18
1868	393	18

The following table, which ranges over twenty-one years, from 1848 to 1868, exhibits the incidence of this mortality in respect of sex and age; and shows that gout kills between four and five males to every female, and that the tendency to death is the most conspicuous between the ages of fifty-five and seventy-five; a very distinctly premature mortality. It is also noteworthy that in the lower ages the proportion of female mortality is much less than it afterwards becomes, or than it is in the aggregate; thus showing that women, for some cause or other, make a longer fight against the disease than men. It may fairly be presumed that gouty women have, as a rule, a very pronounced diathesis or distinct personal tendency towards the disease; and, on the other hand, that such tendency or diathesis is more frequently than in men kept in check by a more tranquil and wholesome manner of life. In so far as this is true, it lends support to the belief already stated, that gout is more dependent upon habits than upon inheritance; or, at all events, that habits must claim at least an equal share with inheritance in its production and development.

Total deaths from gout at different ages in England and Wales during the years 1848 to 1868, inclusive.

	Males.	Females.	Total
All ages . . .	4583 . .	1040 . .	5623
Under 5	—	—	—
5 to 10 . . .	1 . .	1 . .	2
10 to 15 . . .	2 . .	— . .	2
15 to 20 . . .	5 . .	— . .	5
20 to 25 . . .	10 . .	4 . .	14
25 to 35 . . .	64 . .	17 . .	81
35 to 45 . . .	325 . .	79 . .	404
45 to 55 . . .	906 . .	144 . .	1050
55 to 65 . . .	1341 . .	284 . .	1625
65 to 75 . . .	1310 . .	331 . .	1641
75 to 85 . . .	566 . .	160 . .	726
85 to 95 . . .	50 . .	19 . .	69
Over 95 . . .	3 . .	1 . .	4

It appears from the foregoing tables that the number of persons registered as having died from gout is very considerable ; but there is obviously no means of ascertaining how those who die have been treated during their usually prolonged illnesses. So far as my own experience extends, I have never seen a case of gout end fatally, however severe the paroxysms, so long as colchicum had not been administered for their relief. I have known many persons who have sunk under the malady ; but in every case they have been in the habit of relying upon colchicum as a means of cure, and in many instances they have been their own physicians.

The most prominent symptom observed after a succession of attacks of gout is muscular weakness ; the muscles of locomotion becoming relaxed and flabby, and seeming often to be incapable of sustaining the weight of the body. That great internal muscle, the

heart, is in such cases affected in a similar manner ; and become incapable of evenly distributing the vital stream throughout the system, so as to maintain the various organs in a state of functional integrity. In such circumstances, we can easily understand how surely, even if slowly, the powers of life are undermined ; and how soon the sufferer may be rendered unable to contend against the intercurrent disorders, such as bronchitis and other forms of inflammation, which are liable to supervene during the course of gout.

There are few things more painful than to observe the downward progress of an originally strong man, who has been a victim to gout for many years, and who has trusted to colchicum for the alleviation of his sufferings. He has purchased temporary ease at a heavy future payment ; and, as fit after fit of gout has subsided, he cannot but have felt that each one has left him weaker than the last. He has, nevertheless, continued the employment of the remedy, which has so often conduced to the shortening of his sufferings, and has persevered in taking it until it no longer assuaged his torment, and he was compelled to admit that the vaunted medicine is no longer useful to him ; nay, that instead of benefiting him it appears rather to aggravate his discomforts. Formerly, when in the full vigour of manhood, with a strong pulse, and when his veins and arteries were supplied with rich blood abounding in fibrin and red globules, his nervous system would tolerate the depressing influences of this hermodactyl ; but, as year after year went on, his pulse became more feeble, his blood became poorer, and then his nervous system participated in the general change.

His heart and brain would be the first organs to telegraph the alterations which had taken place in the performance of their functions. Then his muscular system would experience failure in strength—the large and small joints of his body would become like rusty hinges, some perhaps incapable of movement without the production of intense pain. Instead of the erect posture once natural to him he would commence to stoop, his shoulders would have a rounded appearance,

and his reliance would be on a stick as an aid to locomotion. The symmetry of his extremities has long been waning, his grasp has become feeble and he shuns with horror a hearty shake of the hand. Instead of his former firm bold tread his feet are scarcely raised from the ground, and he walks with a shuffle, or a slow process of sliding. This is no over-coloured picture, for all who have seen much of gout must have witnessed numerous instances of such gradual and painful decay in the persons of some of the finest specimens of mankind, for it is in individuals of this class that the change from manly vigour to decrepitude is most marked. The inability to take muscular exercise has the effect of diminishing the appetite for food ; but this does not apply to the craving for stimulants. The enfeebled heart seems to call for them to enable it to perform its function of circulation ; and, when a certain amount has been taken, provided no gouty attack exists, the previous depression passes away, and for a time, the shattered frame appears to be renovated. This appearance, however, is but transient, for the nervous system has been too sorely tried to be permanently benefited by the action of stimulants.

It is not, however, too late to render valuable aid even in cases of this description, but such aid can only be afforded by the employment of tonic medicines suitable to the individual case. Quinine alone, or combined with iron in one or other of its numerous forms, will often prove highly advantageous ; and I have found that either the Sulphate or Tincture of the Sesquichloride are generally the preparations of iron which are most decided and effectual in restoring lost tone to the system.

Perhaps the best description of gout, as it affects the higher classes of English society, is that given by the late Sir Charles Scudamore, who for many years enjoyed and utilized large opportunities of observing it. He defines gout to be a constitutional disease, producing an external local inflammation of a specific kind ; the susceptibility to it often depending on hereditary bodily conformation and constitution, but in

many instances wholly acquired; affecting chiefly the male sex, and particularly persons of capacious chests and plethoric habits. In his description of acute gout, he alludes to the preternatural fulness of the adjacent veins; the œdematous swelling of the integuments, occurring in twenty-four or forty-eight hours from the invasion of the fit; to the vivid redness of surface; and to sensations of burning, throbbing, cutting and pricking, and weight.

In the chronic form Sir Charles describes the inflammation as more slight, irregular, and wandering, than in the acute; attended by faint redness of surface, or without any change of the natural complexion; by much permanent distention of parts, or continued œdema, with impaired moving power: and more or less associated with a morbid state of the digestive organs, a languid or oppressed circulation, and much nervous irritation in the system.

In retrocedent gout there is a metastasis or transference of the gouty action, during either the acute or chronic state, from the external part, to some internal organ.

In the history of acute gout Sir Charles Scudamore gives a most minute and elaborate description of the various symptoms connected with the malady, and these are so characteristic of the disease that I will extract it *in extenso*. He says that in some individuals he has traced a gradual increase of abdominal corpulence, attended with an inert state of bowels, a scanty secretion of urine, and uncomfortable sensations of a fulness of the general habit, as being introductory to the attack, and gives us a statement of the *premonitory* symptoms connected with a certain form of the disease: depression of spirits, with drowsiness and frequent yawning, nightmare and restless sleep; heartburn, acidity of stomach, sometimes to the degree of rejecting acid matter; flatulence, hiccup, which is with some so urgent as almost to amount to a spasm of the stomach, as expressed in the language of the patient; irregular appetite, with oppression after a meal; frequent sense of coldness and soreness at the epigastric region;

general itching of the skin ; costive bowels, or more rarely an irritable state of the canal amounting to diarrhœa ; scanty and deep-coloured urine ; or in opposition to this, it is sometimes copious and pale ; pricking and numbness in the lower extremities ; muscular twitchings in the day, and catchings or cramps in the upper or lower limbs, more particularly in the one which is about to be attacked, and occurring chiefly in the first attempts to sleep at night ; much coldness of the legs and feet, and occasional universal chilliness, or general rigors which are even urgent. Restless nights or unrefreshing sleep often precede the fits. An excessive appetite for one or more days before the fit is not unusual ; but this is attended with occasional heartburn and nausea. In some there is an excessive secretion of saliva, approaching ptyalism, and increasing with the symptoms of the paroxysm.

The nervous system is often apprised of the approaching gout by previous general lassitude, with much agitation of mind, palpitation of the heart, or of the aorta in some part of its course, but especially in the epigastric region ; or by tremors and internal flutterings.

In a note Sir Charles mentions that Dr. Baillie informed him of a gentleman who suffered palpitation of the heart for six months without relief from medicine ; but a fit of gout coming on, the palpitation suddenly and entirely left him. He also mentions a gentleman who previous to a gouty attack shed an abundance of tears without the power of restraint ; an instance of a deaf patient whose infirmity was so much increased, "that he could not be made to hear ;" and another of "a heat of the eyes with slight membranous inflammation, as one of the usual premonitory symptoms."

A cough, with much mucous secretion in the tracheal membrane, sometimes precedes the fits ; yielding when the gout becomes fixed. Irritability of the bladder and urethra, swelling of the feet, and a sudden cessation of the usual perspiration in them, occur in some persons just before the fits.

I have been anxious to give the chief symptoms enumerated by Sir Charles Scudamore, as they were the result of close observations made upon upwards of 500 patients who were sufferers from gout, and they present us with a faithful and minute description of the symptoms incidental to the disease. The record gives us a better insight into the pathology of gout that can be obtained from any other source, and at once indicates the existence of defects in the functions of the stomach, liver, and heart; imperfect secretion and excretion by the kidneys, bowels, and skin, and the incomplete oxydization of those effete materials in the blood upon the removal of which the health of the body depends. Sir Charles Scudamore gives a list of 516 cases of gout, showing the parts affected in the first fit: in the great toe of one foot only there were 314 cases; in the great toe of each foot, 27; in the instep of one foot, 25; in one ankle, 36: in each ankle, 11; in the ankle of one foot and great toe of the other, 11; in the outer side of the foot, 10; in the sole of the foot, 4; in the heel of one foot, 6; in the tendo Achilles, 4: in the back of the hand, 4; in the wrist, 4; the remainder are chiefly individual cases where one member only of the body was attacked, as the thumb, knee, middle finger, etc., etc.

It will be observed that the great toe is the part that most commonly suffers, and Sir Charles found that the same toe was most frequently invaded in the second fit, although it seldom happened that the other foot escaped.

Sir Charles says, p. 30, "that the external appearances of the disease vary considerably according to the situation and particular texture of the part which is affected. The redness of surface, together with œdematous swelling, are most remarkable on the great toe, on the foot, the back of the hand, the fore arm, and at the elbow; while at the ankle, knee, and wrist, the increased bulk is produced chiefly by the distention of the bursæ, and of the sheaths of the tendons, and takes place often with little change in the natural colour of the skin. If there be redness, it appears in

these parts chiefly in patches. In the situations before mentioned, the colour, which continues for some time to be of a scarlet hue, is diffused over a considerable extent of surface, and occasionally assumes the aspect of spreading erysipelatous efflorescence ; and this sometimes in so great a degree as to imitate erysipelas itself. When the cellular parts have been for some time swollen and tense, the blood which has stagnated in the loaded and obstructed vessels ceases to give the vivid blush of red, and changes to the different shades of purple. In some few cases under my observation the patient, being corpulent and of a full habit, with a temperament partaking strongly of the sanguineous, the capillary vessels have partially given way to the force of the circulation, and the skin has been here and there, in minute spots, discoloured with the effused blood."

Dr. Gairdner also alludes to this condition of ecchymosis, to substantiate his theory that venous congestion is the first cause of gout, and although Dr. Garrod, who doubtless had not seen this form of the disease, disputes the correctness of the observation, it would still appear, by Sir Charles Scudamore's experience, that such a condition does now and then occur.

Sir Charles has remarked that in urgent and continued gout, the veins of the whole limb are preternaturally distended with blood, and when contrasted with the healthy limb present the appearance of universal fulness. This state of the veins is most remarkable in the leg, but in the arm it is also very distinct ; the vessels sometimes appearing as if they were ready to burst from fulness. This condition also is mentioned by Dr. Gairdner, and its existence is disputed by Dr. Garrod.

Sir Charles allows that in very slight attacks of gout the secretions sometimes do not exhibit to the eye much morbid appearance ; although a close examination of them affords proof of some degree of disorder ; but in severe cases, the tongue is furred, and there is thirst, with loss of appetite. The stomach is affected with flatulency, occasional spasms, and many uneasy

sensations. In conjunction with nausea, and sour eructations, a watery fluid is sometimes ejected, which is very acrid and acid. It is either colourless, or of a grass-green appearance ; and in a long fit, this occurrence happens from time to time. The bowels are for the most part torpid ; and being excited by medicine, the fæces appear unusually foul and offensive, are dark in colour, blackish, or of an olive-green : or in some cases of a clay-like appearance, and often are remarkably loaded with vitiated mucus. The urine is of deeper colour than natural, is secreted scantily in relation to the quantity of the patient's drink ; and on cooling, deposits a pink or brick-dust sediment, with much mucus. Its specific gravity is much increased beyond the healthy standard.

“ During the most urgent symptoms of the paroxysm it is usually passed with considerable irritation, both as to frequency and sense of heat. The pink or lateritious sediment appears more or less in every portion of the urine during the inflammatory symptoms.” Sir Charles then continues to remark : “ When these have entirely subsided, and the state of the liver (*on the condition of which the symptom in question principally depends*) is still remaining unhealthy, the sediment of the urine often assumes a whitish colour, and is compared by the patients to the appearance of magnesia. This and the pink sediment frequently alternate, the one or the other appearing as nervous or inflammatory action most prevails.”

This description of the sedimentary deposits observed in the urine may be repeatedly verified in those cases of gout which have been of long duration ; the sediment of a “ whitish colour ” being due to the presence of phosphates. When such a sediment is thrown down it is invariably indicative of diminished nervous power ; the pink deposit, on the other hand, being characteristic of febrile excitement, and increased arterial action, from the unhealthy stimulus communicated to the heart by the blood containing an excess of uric acid compounds.

Sir Charles Scudamore might with safety have

advanced one step further in his pathological explanation, by tracing other symptoms than the pink sediment to a depraved condition of the liver; for it is most probable he had frequent opportunities of observing that, when the function of this organ was restored to a healthy state, *all* the phenomena of an acute attack of gout disappeared; and both the nervous and inflammatory symptoms subsided.

Most medical writers agree that the "pink" sediment observed in the urine is pathognomonic of gout, or of a gouty constitution, and that the disease is attended with an excess of lithic or uric acid. The usual pathological explanation of this phenomena is that it arises from a defective action of the kidneys which fail to eliminate the urea compounds from the blood, and hence immediately occasion the gouty paroxysm.

A simple inspection of the urine of a gouty person, when it contains a deposit, should convince us of the fact that the kidneys are eliminating from the blood one of the chief causes of the disease, and that the relief to the patient will be in proportion to the quantity discharged.

I have, however, seen several instances of persons who have suffered from severe attacks of gout, in whom throughout the progress of the disease the urine has presented an unnatural clearness, although the inflammatory symptoms ran high; and it has only been toward the end of the fit that the urine has shown a deposit of urates. The observations that I have made, as to the persons in whom this clear condition of urine has occurred, show that they have been possessed of *strong hearts* and *a vigorous circulation*; and that they have been more subject to deposits—chalk stones or tophi,—than those individuals who possessed a more feeble organization and languid circulation.

In reference to the frequency of chalk-stone deposits, the evidence is of a conflicting nature. Sir Charles Scudamore, at page 125 of his work on gout, observes, "that out of upwards of five hundred cases he has seen only forty-five of uric-acid concretions." Dr. Garrod asserts that a deposit of urate of soda is an invariable attendant of the gouty paroxysm.

Sir Charles refers to persons of an irritable constitution, in whom the pain produced by gout is so great "as to disturb the brain and nerves so violently as to occasion high delirium."

"Some suffer from gout in the stomach, which they describe as 'cramp,' and about nine out of twelve are so affected. Others suffer from cramp; the muscles of the thigh and leg being those most frequently affected. The diaphragm, the muscles of the chest, the abdomen, and even of the ribs are not spared. A jerking of the limbs, and excessive restlessness in the early part of the night, may be added to the distressing list of symptoms." He describes a general febrile action accompanying the local inflammation, and that this is symptomatic, and that the fever is constant when the local symptoms do not remit. In the evening, and sometimes in the day, the patient complains of transient chills affecting the frame generally; or in a more partial manner, they run in the course of the spine alone. In some this amounts to a rigor, with lowness of spirits, on first going into bed; and it is followed by an irregularity in the distribution of the animal heat—one part having the sensation of dry and burning heat, another of marble coldness."

"Erysipelas in some constitutions, accompanies the acute gout. In some it precedes, in others it follows it."

"Painful hæmorrhoids, with occasional discharge of blood, not unfrequently accompany the gout. During the fit it sometimes happens that much distress arises from the irritable state of the prostate gland, in which both the bladder and the urethra participate."

Sir Charles Scudamore, in concluding the history of the constitutional symptoms of gout, observes, "Finally it may with little exception be stated of the gout, that it acquires strength with each returning fit, both as to the number of the parts which it attacks; and as to the duration and degree of suffering; and that it does not, like some chronic diseases, wear itself out by repetition, and yield to the friendly power of time. Both constitutionally and locally, also, the susceptibility to the disease increases. A premature old age comes on;

and together with crippled and painful limbs, the nervous system is so enfeebled, that both mind and body grow less equal to sustain the conflict. Such is the melancholy but faithful portrait of the disease when it is permitted to pursue its *natural course*,—such is the sad and certain tyranny of *neglected and encouraged gout*.”

Between gout, as we see it in its first paroxysm, with high fever, strong pulse, burning skin, and acute pain, and the gout that at last causes the wearied sufferer to sink exhausted into an untimely grave, there are of course, innumerable gradations. But these will admit of being classed, in almost every case, upon one or the other side of a line. The varieties are either *plus* or *minus*; the essential difference between them depending upon the power of the system to react against the disease for the restoration of health. So long as this power is present, we may call the gout asthenic. The names should be kept before our minds, because they represent facts, and serve as guides to treatment. One patient will cross over to the *minus* side far sooner than another; and some will even be found ranged upon it from the first. Perhaps the condition that tends most powerfully to asthenia in connection with gout is poverty of blood—deficiency, that is, in some of its essential materials. Deficiency of red corpuscles is usually manifest in such cases; but it may be fairly doubted whether there are not other elements of a less conspicuous kind, that serve purposes of at least equal importance, although their deficiency or absence is less easily detected. The investigation of the part played by minute blood-changes in the causation of disease opens out a vast field of enquiry which pathologists are only just beginning to explore, and it is reasonable to anticipate that their labours in this direction will hereafter be rewarded by a rich harvest of results. At present we can do no more than recognise, in a general way, that there may be changes of the highest importance, both as regards deficiency and excess, of which ordinary examination gives no sign, and concerning which chemistry can as yet say little that is satisfactory. We know how the presence in the blood of an almost

inappreciable quantity of certain substances acts immediately upon function : how a mere whiff of nitrite of amyl relaxes spasm ; how a few volumes of the vapour of chloroform produce anæsthesia or even death. Guided by such analogies, we may obtain glimpses of truth concerning the blood-chemistry of disease ; but we cannot yet apply this knowledge to therapeutics with any degree of definiteness or precision.

Accepting a general deficiency of power to react against disease as the distinguishing characteristic of asthenic gout, it will be found that the manifest signs of this deficiency are most commonly shown by the heart, the digestive functions, and the liver. Palpitations become more and more frequent and distressing as time goes on, and are often connected with excessive flatulence. Indigestion, from having been an occasional annoyance, becomes a daily consequence of meals ; and the sallow or even yellow complexion, frequently associated with clay-coloured stools, and with uneasiness in the hepatic region, speaks to all observers of the deficient secretion or elimination of bile. Imperfect assimilation of food, and irregular circulation, and imperfect depuration of the blood, combine to lower the general tone of the system, and to intensify and prolong the conditions in which they themselves originated.

Besides the variety of distinctly gouty symptoms, about which there can be no manner of doubt, the sufferers from the disease are prone to a number of affections which have been differently estimated and classed by different observers. Thus we read of the *sequelæ* of gout, of *suppressed* gout, and of *vicarious forms* of gout ; and it is plain that these rather loose phrases must include a number of conditions that may be but remotely connected with one another. They obviously may be made to include many maladies accidentally affecting gouty persons, but in no degree gouty in their actual essence. They include also conditions not actually gouty, but still distinctly modified by the diathesis in respect of the characters they assume and the treatment they require ; and lastly they

include conditions that are really manifestations of gout, although not such as are most commonly seen or most readily recognised. It will be desirable to sketch in some detail the most prominent of these several conditions, somewhat in the order of their importance; and to endeavour to trace the nature of the connecting link which binds them together as related phenomena.

One of the most frequent results that we witness in persons who have long been sufferers from gout, is the occurrence of some form of heart disease, either structural, or displayed only by the enfeebled action of the organ. These changes are usually traceable to a deteriorated condition of the blood, coupled with a diminution of the force employed in its transmission. Hence may arise dilatation of the cavities, valvular disease, gouty deposits, and muscular or fatty degeneration.

A short time previous to the death of the late Dr. Bright, he remarked to me, "how much more common heart disease is now than it was formerly; and he asked me whether I could account for the change. I told him that the question had often occurred to me, and that I had formed some opinions with regard to it; but that I would much prefer hearing from him to what cause or causes he attributed the greater prevalence of such disease. Dr. Bright's reply was "he thought it chiefly owing to the greater amount of labour imposed on the heart now than formerly, so that its powers were overtaxed in the race of life; and he added to this, "the different treatment of disease adopted by medical men." There is no doubt that long-continued mental excitement, together with anxiety, prove very frequent remote causes of injury to the heart, and conduce, as Dr. Bright believed, to structural changes. Before, however, such changes take place, some more immediate causes must be in operation to promote and produce them. An enquiry into the nature of these causes is full of interest; for, as in Dr. Bright's time, so in the present day, the constant recurrence of sudden deaths from heart disease is but too familiar to every one.

The approaches of heart disease are often exceedingly insidious ; and the patient may for a long period feel nothing but some trifling uneasiness or oppression in the chest or side, an uneasiness often attributed to indigestion. He may also experience some difficulty of breathing, aggravated by full meals or by sudden exertion ; but such symptoms are seldom of sufficient severity, or of sufficient frequent occurrence to occasion alarm for the safety of the citadel of life. It is not until they become more urgent that medical advice is sought, and even then nothing short of a very careful examination will reveal the nature of the malady.

In former times such symptoms would have been unhesitatingly treated by blood-letting, certainly with temporary relief, and not seldom with permanent cure. If this powerful agent had remained in medical hands alone, it would probably be still employed in many cases. But it passed so completely into the region of domestic prescribing, and was so largely and improperly practised by ignorant persons on account of its immediate effects, that the permanent evils of its abuse at length attracted general attention, and brought it into complete but not wholly deserved desuetude.

It has been frequently discussed whether the human constitution and the type of disease have not undergone great changes during the last quarter of a century. The opinion that men are neither so strong as they formerly were, nor so capable of supporting the loss of blood, has found many advocates, who tell us that diseases now present symptoms mainly of an asthenic order, and require a mode of treatment different from that which was once successful.

I would venture to express my opinion that the belief in these assumed alterations in individuals and in their diseases is to be attributed more to changes that have occurred in the minds of medical practitioners than to any alterations in either men or their maladies ; and that the altered views of treatment have now become impressed on a generation who have had no experience of the power that blood-letting exercises in curing and in preventing disease. Those medical men who may be

said to have lived in two eras have imperceptibly gone with the stream, and have learned to relinquish their sheet anchor, as bleeding was frequently designated. It is therefore a fair question, as suggested to me by Dr. Bright, whether the altered views of medical men, with regard to the treatment and prevention of disease, may not have exercised a powerful influence in conducing to the greater amount of mortality now resulting from cardiac affections.

It would indeed be difficult to conceive a change more marked than that from the former to the present treatment, either of acute disease, or of states in which oppression of the circulation points out that it may be impending. Even if bleeding were not practised, yet cathartics were sure to be freely and often continuously administered : a kind of medication which is now only tolerated in the form of a course of mineral waters during a few weeks of the year ; for the rest of which the patient will probably be left to his own devices.

It is as difficult to escape heterodoxy in an age of doubt as to avoid disease when living in an infected atmosphere. The tendency of human nature to pass from an extreme to its opposite is familiar alike to philosophers and to the vulgar, and has been repeatedly exemplified in the history of medicine. No one who has had opportunities of witnessing the incautious way in which blood was formerly abstracted can doubt that by its loss much injury was frequently inflicted ; but it would be equally impossible to doubt that life was often saved, and organic disease prevented, by a judicious use of the lancet. Unthinking persons misused depletion, as they have misused other powerful remedies, by applying it to nearly all disorders, and alike to the robust and the feeble. Men of skill and carefulness were not open to this reproach, and restricted their employment of the remedy to persons in whom there existed undoubted evidence of a plethora of a kind of blood which contained fibrine and corpuscle in excess. By the timely abstraction of a portion of the vital fluid, they enabled the chemistry of the body to rectify the faults of the remainder. They refrained from depletion

when the blood was of an opposite character, or when ever there was a suspicion of organic disease ; and they recognized at once the value of Marshall Hall's suggestion, that blood should be taken in the upright posture, so that the flow could be stopped as soon as the earliest feeling of faintness showed the heart to be suffering from the want of its accustomed stimulus. Presuming, therefore, that blood-letting, as it was once practised by men of judgment, was in many cases attended with advantage, the inquiry naturally presents itself : What has been the probable effect of its almost entire abandonment in the present day ?

My own observation, and that of others upon whom I can rely, leads me to the conclusion that the disuse of blood-letting, in persons of a certain constitution, has contributed to the production of three classes of diseases which are more frequently met with now than in former times. The first of these classes is formed by diseases of the heart ; the second by cerebral affections, terminating in mania or paralysis ; and the third by diseases of the kidneys. That these several conditions may be prevented by other means than blood-letting I do not hesitate to assert ; but, as I have already mentioned, another of the most potent prophylactics—catharsis, has also fallen into almost equal desuetude with venesection itself ; and thus the two remedial agents that are most powerful in relieving the system from oppression, and subsequent organic disease, are regarded by some as equally unnecessary, and by others as equally dangerous. It is impossible to attach too great importance to symptoms that may ultimately be the precursors of organic disease ; and there is no function of the body that can for any long time be over-weighted or imperfectly performed, without this liability being involved in its impairment. I feel sure, therefore, that in many forms of local visceral congestion, the disuse of depletion and of catharsis adds very materially to the danger of the patient.

Violent shocks to the system, when the consequent blood-stasis in the heart and throughout the vessels has neither been relieved by venesection nor counteracted

by the judicious use of stimulants, frequently prove instrumental in occasioning eventual heart disease. And here I may remark, how greatly the modern practice in such cases *appears* to differ from that formerly pursued. The administration of brandy has superseded the employment of blood-letting; but, although the statement may seem a paradox, the operation of both is in some measure the same. Brandy is given for the purpose of stimulating the heart to increased action, so that it may overcome the stagnation of blood usually following an injury; blood-letting was resorted to after the heart, by a more moderate process of stimulation, had been roused to a state termed then as now reaction; and the vessels were unloaded, and the oppressed functions of the body set at liberty, by a reduction of the temporary vascular plethora.

There is no doubt that, in the case of weakly persons, the exhibition of stimulants would in most instances be sufficient to restore the equilibrium of the circulation; but it may be questioned whether the same rule of treatment will apply to persons of an opposite character, whose veins and arteries are full of blood, and that of the richest kind. I think not; and I do not doubt that I have seen many injurious consequences arise from the neglect of venesection in cases suitable for its employment. I could give numerous instances in support of this opinion, and will select from my note-book two or three as examples.

A young gentleman aged eighteen, when out shooting, was injured by the bursting of his gun, an accident which occasioned the loss of two of his fingers. Very little blood was lost, and he appeared soon to get well. He found, however, that he never recovered the full measure of strength that he had possessed prior to the injury: and he never went out, either shooting or fishing, without going in the middle of the day to lie down on a bed, if one was to be procured, or at least without reclining in some fashion or another.

He was not by any means an intemperate man, but the use of stimulants seemed necessary in order to enable him to enjoy the amusements in which he

delighted. He married at the age of twenty-five, and lived a steady life—indulging more in smoking than he should have done, but maintaining that he felt better for it. One day whilst fishing in Wales, he was wading, and was suddenly seized with a sensation of severe constriction in the throat. He felt as if he were being suffocated, and attempted to cry out to a friend on the opposite bank, but could not utter any distinct sound, and his attempts at speech were so unnatural that his companion thought he was amusing himself in an eccentric way. With the greatest difficulty he reached the bank of the river, and at once cast himself on the ground, where, in the course of a minute, as he afterwards told me, he felt as if nothing had happened to him, so quickly did he recover when in the recumbent posture. I was convinced that this attack proceeded from some affection of his heart, and although there were no abnormal sounds that could be detected, the heart was manifestly very feeble. I therefore advised that for the future, as long as he lived, he should always have a small flask of brandy with him, and should at once resort to it if he experienced a return of his former sensations.

Three months afterwards he was one evening leaving his smoking room, in which his wife was sitting, when she made an observation which caused him to turn his head round suddenly, and he was immediately seized with a paroxysm similar to that which he had experienced in Wales. He remembered my advice: there was a bottle of brandy on the table—he instantly swallowed some, and was speedily relieved of the sensation of suffocation. Six weeks later he was at a ball, and remained there until four o'clock in the morning, but did not dance. On lying down in bed he was attacked for the third time with oppression of his breath. His wife ran instantly for some brandy, but there was no stimulant of the kind in the house. She at once sent for the nearest medical man, but before he arrived the patient was dead. A post-mortem examination revealed extensive fatty degeneration of the muscular tissue of the heart, and the organ as a whole

was large and flabby. The age at the time of death was thirty-one years.

When young this gentleman was a full-blooded and very healthy man, and it has since often occurred to me that if he had been subjected to a moderate abstraction of blood after his accident, it is possible his heart might have escaped the injury which was inflicted on it. I am at a loss to assign any cause for the enfeeblement and disease of this organ at so early a period of life, unless it were the task of distributing its former quantity of blood after the nervous system had received so severe a shock.

A gentleman of good muscular power, aged thirty-five, had been riding on the outside of an omnibus. On getting down, his hand caught in the circular iron at the side of the vehicle, placed there for the purpose of preventing persons from slipping off. When resting on the wheel his foot suddenly slipped, and he hung suspended by his little finger, on which was a massive gold ring. His weight was considerable, and he fell to the ground leaving his finger fixed in a convulsion of the iron work. On rising he looked up at the coachman, and calmly desired him to give him the finger which he had left behind. Scarcely any blood flowed after the accident, and he spoke of it in a spirit of bravado. All his friends, however, noticed that a great change had come over him after a few weeks, and at the end of a year from the time of the accident he died suddenly, from what was discovered to be disease of the heart. Previous to the occurrence of this accident he had enjoyed the most perfect health, and did not know what sickness was.

A lady, aged fifty-six, of highly nervous temperament, thin, but enjoying excellent health, and full-blooded, in closing an iron chest suffered the heavy lid to fall upon the last three fingers of her left hand. The pain was most excruciating. She did not faint, but was a long time before the fingers recovered from the severe contusion. From that day she was never well; and a few months afterwards was seized with paralysis, of which she ultimately died. She was not

subjected to any special medical treatment after the accident.

The following case is illustrative of the relief afforded by an early and prompt abstraction of blood. A gentleman aged fifty, weighing fifteen stone, fell on his back upon a hard and slippery road during frost. He was taken up and carried home, feeling all the time the most extreme difficulty of breathing. On visiting him, which I did shortly after the accident, I found him reclining on his back, gasping for breath, and unable to speak intelligibly. After an examination, as no bones were found to be broken, I at once sent for a cupper, and instructed him to take a pound of blood from the back, immediately over the junction of the diaphragm with the ribs. This afforded almost instantaneous relief to the breathing and speech; and although he could not raise himself for six weeks without the aid of pulleys, he never suffered any subsequent inconvenience from the accident. The stress of the injury in this case appeared to have fallen on the diaphragm, which the abstraction of blood relieved from oppression.

The heart disease of the gouty will comparatively seldom, of course, be traceable to the effects of any sudden shock. It is usually produced by the gradual influence of congestion of other viscera, especially of the liver, and of the kidneys consecutively to the liver, by which the mechanical labour of the heart is increased, while at the same time it is supplied by imperfectly depurated and possibly irritating blood. It will often be the case, moreover, that gouty men have been in their youth habituated to active or even violent exertion, and that their hearts have been rendered prone to disease by the calls thus made upon them. The muscle that was once almost hypertrophied, in response to the demands of athletic sports or other forms of exercise, seems to have an especial proclivity to fatty degeneration when its full powers are no longer called into play; and the large heart, when its walls are wasted or enfeebled, becomes of necessity a dilated one. It is seldom that we can consider heart disease as a gouty phenomenon. It is usually a mere concomitant of gout;

and it is due to the fact that local congestions and defective exertion have called upon the organ to accomplish unusual labour, while they have at the same time undermined its sources of force and of repair. Whenever gout is manifestly attended by cardiac oppression it behoves us to watch the case narrowly, to assist the heart by tonics and stimulants, or to relieve it by the cautious diminution of its load. But we must not look upon the heart symptoms as being forms of gout ; nor must we expect permanently to relieve them by any kind of specific treatment.

The connection between gout and disease of the liver is of a very different order, and will form the subject of special consideration in a subsequent chapter. It is sufficient to say here that the habits of life of gouty persons are nearly always such as to tax the powers of the liver unduly and unfairly, and that some increase in its size is probably an invariable precursor, and accompaniment of gout. The detection of this enlargement cannot always be accomplished without examination in the erect posture ; since, unless it be of very considerable amount, the viscus falls back when the patient is recumbent, and does not so readily reveal itself to palpation and percussion. I am disposed to regard functional hepatic derangement as being very often the first link in the long chain of gout and its concomitant disorders, and organic disease as a not unfrequent result of long-continued functional derangement. On this view the diseases of the liver met with in gout are usually either the causes of the gout rather than its effects ; or they are at least the results of a cause common to both.

Perhaps the most frequent cause of death in the gouty is bronchitis, a disease that in them, as well as all other persons, is more liable to lead to a fatal issue at an advanced than at a middle period of life. Still it cannot be doubted that the gouty diathesis entails a great liability to bronchitis, and an increased tendency to an early and fatal termination of the disease. This tendency is in great measure due to two causes : in the first place to engorgement of the liver, a state which invariably adds, even if only mechanically, to the

danger of the patient ; and next, to a composition of the blood which involves an abnormal liability to congestion of mucous surfaces, and to the formation of acrid secretions from them. We all know, from the experience of ordinary catarrh, how much the thin fluid first poured out by the Schneiderian membrane, irritates the lip and the openings of the nostrils ; and we know by the character of the cough and general symptoms that the same spreading of irritation occurs in the early stages of bronchitis. It is easy to conceive how much it may be increased, and how much the superficial area of the disease may be extended, when the secretion is yielded by blood that is itself unnaturally charged with morbid products, or with effete matter from which it ought to have been freed. Hence the bronchitis of the gouty speedily assumes characters of its own, and requires to be met by the use of medicines that will alter the character of the secretion, while they diminish its amount and facilitate its removal. To stifle cough by anodynes is in such cases always dangerous and often fatal ; and the treatment most conducive to success will be the employment of expectorants with alkalies, together with measures for relieving hepatic congestion, and for maintaining such catharsis and diaphoresis, as the patient will bear and the case may require. The timely administration of a small dose of calomel, followed in five or six hours by a little castor oil, or other suitable aperient, at the onset of an attack of acute bronchitis, (the necessity for such a prescription being rendered evident by the appearance of the tongue, by oppression of the breath, with constriction of the chest, or by cerebral discomfort) will frequently deprive the disease of its more grave and alarming characters, and will increase the efficacy of the adjuvant remedies which are required to conduct the bronchitis itself to a successful termination. It is to the relief which such purgation affords to a congested liver that its valuable properties are to be attributed. No serious oppression of the heart or lungs can occur in which the liver does not participate more or less in the engorgement.

The cerebral functions are sometimes seriously, at other times slightly, affected in gouty persons. The acute paroxysm is occasionally attended by delirium. Optical delusions, mental phantasms, and perversion of ideas are also met with in a few cases, and may be ascribed to the influence on the brain of the vitiated blood. Giddiness again is a common symptom, but it appears chiefly to arise from deficient circulation, remotely due to hepatic and abdominal congestion, which impede the natural flow of blood to the right cavities of the heart. Another not uncommon condition is gouty hypochondriasis; and there are perhaps few maladies that occasion more distress. From what we know of the state of the blood in gouty persons, we may almost wonder that such disease is not more common than it is, and that the cerebral functions are not more frequently disturbed in such a manner. The hypochondriasis of the gouty is less often characterised by delusions than similar disease when unconnected with gout, but the depression attending it is as great or even greater than if delusions were present. The individual has no special grievance upon which to dwell, but anything connected with him is viewed as "through a glass darkly."

The incidence of this malady is sometimes periodical; and I am acquainted with a lady who suffers from gout, and who has had an attack of hypochondriasis every spring for twenty years. As she gets older the attacks last longer and are more difficult to remove.

I am also acquainted with a gentleman whose mother at the time of her pregnancy was insane. He inherited from her a cerebral organization peculiarly prone to be affected whenever his digestive or assimilating organs are deranged. He is also an occasional sufferer from gout; and he is subject to severe fits of mental despondency and depression, for which no external causes are assignable. Whenever his urine is examined under these conditions, it invariably contains large oxalate of lime crystals, and their diminished size and gradual disappearance, under the corrective influence of medicines, are the first indications of a return to his

natural state of mind. Such, indeed, is the ordinary history of gouty hypochondriasis, which is usually a symptom of oxaluria, and usually disappears when this cause for it is discovered and removed.

Among the less alarming but still very troublesome ailments to which the gouty are prone, must be mentioned a variety of affections of the skin, and especially eczema, prurigo, and herpetic eruptions. These are for the most part, when occurring in the gouty, distinctly forms of gout; and will be found either to require treatment addressed to this disorder, or else, if they yield to such remedies as arsenic combined with local applications, to leave in many cases far worse mischief behind. My experience has made me aware of more than one instance in which the repression of eczema in the gouty has been shortly followed by the appearance of malignant disease, and although the connection between the two is not apparent, and would be difficult or even impossible to trace, yet the events have impressed me as being something more than mere coincidences. I should feel it to be highly dangerous to cure in a gouty person any skin disease which was an outlet of discharges, unless prolonged and careful attention could afterwards be paid to the state of the general health, and to the functions of the great emunctories; and in many of such cases I should be disposed to employ a remedy of long established repute, which is often highly useful after the cure of chronic ulcers: that is, the insertion of an issue or seton in the neck or arm, and its gradual closure after it has been for some weeks in activity.

There is probably no external malady which occasions so much distress as eczema. Words are hardly adequate to express the sufferings of those who are afflicted with this disease in its severer forms. Patients describe the violent itching as being intolerable, terrific, maddening, and so forth. I will quote an account of a typical case, one which was furnished to me by the patient himself, Mr. A., and which is of especial interest from the benefit which speedily followed change of air.

“The first time I suffered from eczema was in February, 1881. I had a very painful attack of gout, on the 1st of December, 1880, in both feet, which kept me in bed twenty-one days, and in my room until the 13th of January, 1881. On the 26th of January a sudden attack in both feet kept me in bed fourteen days. On the 14th of February I was troubled with eczema in both feet and ankles, and on the 23rd it extended to the shoulders. This continued until the 6th of March, when I got gout in both feet and hands, and the eczema left me. I was not visited again by eczema until about Christmas, 1881, when I suffered from it chiefly in my hands.

“In January and February, 1882, it was not very troublesome, but in March it extended to the arms and legs. In April I consulted Mr. S., a skin doctor, several times ; and on the 25th I consulted another skin doctor, and I took their prescriptions for more than a month, when, finding it was not getting better, I decided upon going to Bath. My sufferings during this time were very great, particularly at night. I found that a mixture of glycerine, calamine, and oxide of zinc was the best application to the skin. I have been obliged to use this on going to bed, say at ten o'clock, then again at one, three, and four. The anointing seldom gave relief for more than two hours at a time. The eczema covered the neck, chest, shoulders and arms, thighs, legs, ankles, hands and the head partially. The irritation was scarcely describable. On awaking in the night, and finding that I was scratching, the irritation was maddening, terrific, horrible, and enough to drive me out of my senses.

“On the 18th of May, 1882, I went to Bath, and put myself under Dr. C. I stayed at the Grand Pump Room Hotel, where baths are to be had in the building, and this I found a great convenience. I took altogether thirty-two baths, having remained five weeks. After the first fortnight, I felt much relief after each bath, and fully expected to be cured by the course of twenty-four. But, after having taken thirty-two, I found the eczema still continuing, although not so violent as before.

"On the 8th of July I returned to town. On the 12th the irritation became worse, especially at night; and, even in the daytime, between the 12th and 18th, I have been obliged to go home to strip and anoint myself. When night came, I dreaded going to bed; and I cannot describe how utterly miserable I felt.

"On the 20th of July I called on Dr. H., who prescribed for me a different medicine and regimen, which I continued until the end of the month, but all the time I suffered torture, and was compelled to use repeated applications of the anointing during the night, and sometimes during the day. I continued the same until the 7th of August, when Dr. H. ordered me to proceed to Yarmouth in Norfolk, by steamboat from London Bridge, enjoining that I should remain on deck as much as I could, and stating that the sea-air would cure me. On the following day, the 8th, I left in the steamboat *Seine*, at 7 a.m., the weather fine, and with a north wind. Not having breakfasted, I expected to make a hearty luncheon when we reached the fresh sea-air in the vicinity of the Nore, but, strange to say, I had no appetite whatever. There was plenty of food on board, but I could not taste a single morsel. We arrived at Yarmouth at eight o'clock. I landed, and drove to the Victoria Hotel, but I could not eat anything there. My appetite was completely gone, and so also was the eczema. All irritation has disappeared, and I slept that night a long and sound sleep.

"I remained until Saturday without being able to eat any food, and then returned to town by rail. I felt very much weakened and very nervous. On weighing myself two days after my return, having been taking food in the interval, I found that I had lost ten pounds."

This patient has had no return of eczema up to the present time.

Another gentleman, Mr. R., had suffered for many months from the same disease. His pain was even greater than that of Mr. A., and his skin, in many parts, was quite raw from scratching. The itching alone was the cause of Mr. A.'s torture, and if abrasions

had been present in his case, I think, from his nervous temperament, that he would have been unable to support the combination. Mr. R., fortunately, was more phlegmatic, and he bore his troubles with greater heroism. The whole of his body was covered by an eczematous eruption, in many parts by a collection of small vesicles, which, when broken by scratching, became sores. His hands, between the fingers, had all the appearance of hands suffering from itch. He had not had a good night's rest for many months; and, although he obtained some relief from medicine, it was but of a trifling kind.

Having seen the effect produced upon Mr. A. by his trip to Yarmouth, I ordered Mr. R. to make the same voyage, and to remain there for a week. He did so, and, at the end of the period returned to town without a vestige of eczema remaining. A fortnight later there was a slight recurrence on his hands, and I advised him to repeat his trip. This he was unable to do, and I prescribed sulphur baths. After the first, in which he remained twenty minutes, all the eczema had disappeared, and I told him to take a few more. After the last, he took a chill, and his skin became covered by nettle-rash, with a recurrence of eczema between the fingers only. He then took the following prescription for a fortnight, after which he remained free from his complaint.

R. Pil Plummeri
Pil Coloc. Co. āā gr. v.
M ft. pil ij omni nocte sumendæ

R. Tinct. Gent. Co. ʒi.
Liq. Potassæ ʒviij.
Sp. Ammon. Arom. ʒiv.
Æth. Chlorici ʒiv.
Infus. Gent. Co. ad ʒviij.
M. Capt. ½ part. bis die. c̄ ʒ ss aquæ

Two of the best local applications for relieving distress from itching are a lotion composed of four drachms of hyposulphite of soda, in six ounces of water, and an ointment of equal parts of tar ointment and vaseline. Moreover, whenever itching is persistently troublesome in old people, it is necessary to bear in mind the possible presence of pediculi.

Besides the concomitant disorders that occur in persons who have been the subjects of acute gout, we may find many patients who suffer even for years from the various protean symptoms which are connected with the gouty diathesis, and who yet have never had a gouty paroxysm. It is a question whether these persons are not greater martyrs to the disease than those who are subject to its more manifest form. I have invariably noticed that gout has existed in their families, either on the mother's or father's side. The recognition of the disease in such individuals is not always easy, for it is apt to be confounded with rheumatism and other ailments; but there will usually be some external evidence at a certain period of life afforded by the enlargement that takes place in the joints of the fingers, sometimes only in one of them, and which seems to place the matter beyond doubt; the occasional sharp lancinating pain through one or more of these members, gives evidence of the existence of the *materies morbi* in the system, although it has never made itself felt by the occurrence of inflammation. Persons of this class are especially liable to what may be termed vicarious fits of gout: that is, to attacks falling upon internal organs such as the stomach, heart, and lungs, or upon external organs which usually escape in those who have the ordinary development of the disease. The eye is the external organ most frequently affected; and I have known several instances, chiefly in females, of patients who have lost one eye from gouty inflammation, but who have never had a fit of gout of any other description, and who have lived to very advanced age.

I am acquainted with a lady who is now sixty years of age, and who suffered some years ago for a period of six months from intense pain and inflammation of the left eye. She was a patient of the late Mr. Alexander's. He contrived to subdue the inflammation from time to time, by the repeated application of leeches, blisters, etc.; but all the resources of his well-known skill never succeeded in doing so for more than a few days together, until the patient was nearly worn out by constant pain and want of sleep. It suddenly occurred

one day to her husband, who was a medical man, that this obstinate form of inflammation might perhaps be due to gout. His wife had never given him any reason to believe she was a gouty subject, but he remembered that her mother had been a great sufferer from the malady, and had died of it; moreover that on her father's side there was gout also. He told his wife what had been passing through his mind, and informed her that he would take upon himself to treat her for a few days until she saw Mr. Alexander again. He commenced treating her for gout that night, and she obtained the first sound sleep she had had for some months. The next day her pain was gone, and she remained free from it for a week. At the end of that time, her husband requested her to pay a visit to Mr. Alexander, and to inform him of what had taken place. Mr. Alexander smiled, and said he thought the gout was a crotchet of her husband's, and according to his usual custom placed something in the angle of the eye, which instantly produced a recurrence of pain and inflammation. This necessitated a return to the treatment for gout, but it took ten days before the inflammation and pain were thoroughly subdued, since which period the lady has never suffered from a return of the affection. Her eye, however, still exhibits traces of the injury done by the gouty inflammation, and the sight is not equal to that of the other.

It is by no means uncommon to witness (more especially in females who have arrived at a certain period of life) the most acute suffering from spasms, which are the results of the gouty poison existing in the system. These spasmodic attacks are in some instances very alarming to witness, and there is no doubt that they are often a cause of death. Previous to their occurrence the patients usually suffer more or less from dyspeptic or bilious derangement, which may be but slight, when from some trivial exciting cause, such as an error in diet, to which indeed, an attack is most frequently referred, they are suddenly seized with the most intense pain in the region of the stomach, speedily extending to the diaphragm, and in the worst cases involving

also the heart. There is every reason to assume that such attacks arise from some powerful irritant existing in the stomach or even in the blood generally, which operates upon the nervous centres, and produces disturbed action of the great sympathetic and pneumogastric nerves.

The patient in such cases seems incapable of drawing a breath, and the attempt at inspiration is attended by excruciating agony. The pectoral muscles seem for the time to be paralysed, and are often the seat of most intense pain. The whole body is of icy coldness, and the pulse is scarcely perceptible at the wrist. Attacks of this nature are sometimes attributed to the passage of gall-stones, which occasion very similar symptoms, excepting as regards the oppression of the breathing, which is not usually observed to so great an extent.

The treatment in either case is nearly the same, and the more promptly it is applied the more speedy will be the relief. It will almost invariably be found that the patient complains of feeling sick, and it will be by a due appreciation of this *index naturæ*, that we shall afford the most immediate and lasting relief. A stimulating emetic should be instantly prescribed, and should be followed by copious draughts of water as hot as it can be comfortably borne. The readiest and most generally obtainable emetic is mustard, which is perhaps the best under all circumstances, as it leaves no feeling of nausea behind it. One teaspoonful of the flour of mustard mixed in a tumbler of very warm or hot water is the proper dose, and this may be repeated in the course of four or five minutes. Copious dilution by drinking warm water should then be resorted to, and when the patient has swallowed as much as the stomach will hold, the fauces should be irritated with a feather, or the finger until vomiting is produced. When free vomiting has been continued sufficiently long, which may be judged of by nothing but water being rejected, it will be found that warmth has returned to the surface of the body, that the pulse is again perceptible at the wrist, and that although the individual may not be

relieved entirely from the spasms and the pains consequent upon them, the severity of the suffering is assuaged, and the stomach has been rendered tolerant of medicine, which if it had been prescribed at an earlier period, would probably not have been retained, or would have been more prejudicial than serviceable. A full dose of laudanum should now be administered, not less than from twenty-five to thirty minims, and more in the discretion of the practitioner. It will be found that those persons who have previously suffered from severe spasmodic attacks, can bear much larger doses of opium than those who have never done so. My practice is to prescribe ordinarily thirty minims for the first dose, and to follow it by fifteen minims more in an hour's time, if complete freedom from suffering has not been obtained. This apparently simple mode of treatment has not been arrived at without great previous disappointment in the adoption of other methods, such as the exhibition of brandy, ether, ammonia, local applications, etc., all of which had repeatedly failed in severe cases to afford the smallest relief, and indeed had seemed rather to do harm to the patients, and to prolong their sufferings.

The subsequent treatment required on the subsidence of the spasmodic attack must be regulated according to the evidence of the special derangements found to be present in the system, and these will most frequently be discovered to arise from defect existing in the stomachic and hepatic functions.

Attention to the re-establishment of a healthy condition of the stomach and liver will be the surest and safest way to prevent recurrence of the spasms, and to prevent the system from becoming charged with those noxious elements which are the foundation and root of gout.

Cases are also met with, in which some distressing functional disorder is shown by time to have been due to the elements of gout, and is relieved by the elimination which attends a paroxysm. The heart is especially prone to suffer in this way, and to exhibit irregularity of action when supplied with gouty blood. The

symptoms thus arising are often a source of much anxiety to the patient and the practitioner ; and may lead to more than a suspicion of the existence of organic disease. The following case may serve as an illustration :—

I was consulted by a lawyer from the country, aged fifty-two, who complained that he had not been well for some time, but that he felt a difficulty in describing what was the matter with him. He could not say that he was really ill, but everything he had to do was done with an effort ; and his profession, instead of being a source of pleasure to him, as it was formerly, had become a matter of drudgery.

He was moderate in his appetites, and ate and drank much as usual, but these acts were devoid of all enjoyment. He slept tolerably well, but awoke in the morning unrefreshed. He was always a good walker and fond of the exercise ; but now a walk was a task to him. His breathing was easily hurried on going uphill, or ascending steepish stairs. His complexion was slightly sallow, his tongue tolerably clean, and his different natural functions were correctly performed. His urine was clear and of the ordinary specific gravity. He was well formed, and his weight ten stone. His pulse was sixty, rather feeble and labouring. On examining his heart the sounds appeared muffled, and it was evident that the blood did not circulate freely. He was ordered a course of gentle alteratives with laxatives and steel and quinine. He pursued this treatment for a fortnight, at the end of which time he had regained his usual feelings of health. At the close of the third week he awoke in the night with an attack of gout in his right great toe. On visiting him and examining his heart its action was perfectly natural, and no trace remained of the former suspicious sounds. The fit of gout was of short duration, and he not only looked all the better for it, but also expressed himself as feeling so.

Another viscus which is liable to be sympathetically affected in gout, and to be a cause of much distress to the patient, is the urinary bladder ; and in its troubles

the prostate gland and urethra are frequently involved. But simple irritability of the bladder may occur, independently of any enlargement of the prostate, and may generally be traced to defects in the digestive and assimilating processes. The blood that is made, when these processes are defective is unhealthy in character, and its serum is less alkaline than in the normal state. The urine that is eliminated by the kidneys from such a source, will, in the majority of instances, be found to contain an excess of urea, or of its compounds; and these act as local irritants upon the neck of the bladder, and occasion a desire frequently to relieve it of its contents. Moreover, when there exists in the blood an excess of gouty poison, or even of sugar, as in diabetes, an extreme amount of irritation may be produced in the lining membrane of the bladder; and the quantity of mucus then discharged is sometimes excessive, and amounts to catarrhus vesicæ. Cases of stricture of the urethra will, under such conditions, be much aggravated; and the œdematous state of the mucous membrane of the urethra will increase the difficulty of micturition. It is not at all uncommon, in milder cases of irritation of the mucous membrane, arising from a gouty condition of blood, to observe a discharge that proceeds from the urethral lining membrane also, so that the individual appears to be suffering from gleet.

A long-continued irritation of the bladder, produced by an impaired or impure condition of the blood, may ultimately lead to an alteration in the structure of the viscus, which may become so diminished in size as to be capable of holding only a small quantity of urine; and on the other hand, in cases complicated with prostatic disease, its capacity may be so increased from excessive distension that its walls will present the appearance of extreme attenuation.

Of all the complications to which the gouty and rheumatic are prone, there are none that entail upon them more misery and discomfort than affections of this class, whether or not they are complicated with disease of the kidneys. The irritability of bladder

alone, which may be unconnected with any change of its structure, is often sufficient to embitter the life of the unfortunate patient, who suffers from a constant desire to pass his urine, and who has no sooner accomplished the act than the desire returns. The longer such a state of things has continued unchecked by art, the more difficult and intractable it will be to cure.

It is impossible, therefore, to pay attention too soon to the premonitory symptoms indicative of an abnormal action of the bladder ; for upon promptitude will depend not only the celerity with which relief can be afforded, but also the power to prevent future disease. This should be more particularly borne in mind by those whose progenitors have suffered from similar disease ; for there is no doubt that it is often hereditary, and that a weak bladder is as likely to be transmitted from a parent to his offspring, as weak lungs are from one who is phthisical to his children. In both instances, disease may usually be either modified or prevented by an early attention to the premonitory symptoms indicative of threatened mischief, for the warnings are often long and ample before they issue in the occurrence of organic change.

When the prostate gland becomes involved in the disease, it is liable to suffer either from acute or chronic inflammation, or from simple or gradual enlargement. Acute prostatitis may be sometimes due to irritation propagated along the ducts of the gland from the urethra ; or it may be a consequence of preternatural excitement of the sexual organs, especially at an advanced period of life, or it may be brought on by riding much on horseback, sitting habitually on soft cushions, or accidentally on wet or damp cushions ; by a frequent neglect of due evacuation of the urine or of the bowels ; by the abuse of purgative medicines ; by the excessive use of spirituous and vinous liquors ; by exposure of the lower extremities to cold or wet ; by morbid secretions from diseased kidneys ; and by the irritation and pressure of calculi in the bladder.

The causes are thus various that induce this inflammation, and the symptoms are pain and heat in the perineum

extending to the anus ; a frequent desire to pass water, which is scalding on being voided ; tenesmus and a sensible enlargement and heat of the gland when examined per rectum. There is also symptomatic fever, and sometimes retention of urine.

Mr. Coulson, in his work on Diseases of the Bladder, p. 259, 1842, accurately remarks, "that the evacuations from the bowels cause great uneasiness ; and there often remains a sensation as if the rectum was not completely emptied, giving rise to distressing tenesmus. Upon making an examination per rectum, the prostate is felt as a small, round, and hard body, projecting downward on the bowel, which feels hot, and pressure on the gland is exceedingly painful. If a catheter or sound is attempted to be introduced, it passes without difficulty as far as the membranous part of the urethra ; but its passage onwards is attended by acute pain, and severe spasmodic contractions."

Acute prostatitis is not only a source of much suffering, but also of great danger. It not uncommonly proceeds to suppuration ; and, unless the pus be early evacuated by incision, the abscess may empty itself into the urethra, and may afterwards receive urine, and be a source of extensive sloughing of the neighbouring tissues. In such cases elderly patients usually sink from exhaustion, or from the absorption of decomposing matters into the blood. The more chronic forms and the simple enlargement are not immediately dangerous ; but when they affect the middle lobe of the gland they become so indirectly, by giving rise either to absolute retention of urine or to incomplete evacuation of the bladder. A pouch is apt to be formed behind the gland, and to become a perpetual receptacle of residual urine, which in time undergoes putrefactive changes. In such cases we have not only great irritation, but also, sooner or later the symptoms of blood poisoning. A fatal illustration of this danger was furnished, not long ago, by one of the most popular and talented of English writers.

CHAPTER III.

CAUSES.

IN endeavouring to estimate the causes of gout, it has been far too much the fashion of writers to adopt some hypothesis of rather limited scope, and to endeavour to rest a large and diversified series of facts upon some single and frequently narrow basis. So much has this been the case, that I regard past speculations on the subject chiefly as affording valuable materials for building up a doctrine which may be more correct than those that have preceded it, simply because it is more comprehensive. After the purely humoral pathology of Sydenham had for a time given place to the "nervous influence" of Cullen, there arose a period in the history of medicine at which the researches of chemists and physiologists began to have a practical bearing upon the opinions of pathologists and the treatment of physicians; and in which the key to the enigmas presented by such diseases as gout, rheumatism, and diabetes, was eagerly sought in the laboratory and in the test tube. The investigation of these maladies was undertaken, almost as a speciality, by those who might be described as chemical physicians, although their claim to possess the ground was every now and then disputed by others, on *data* which were based upon the resources of common observation alone. Chemical hypothesis were set against hypothesis derived from clinical research, and great differences of opinion, as well as energetic efforts for the establishment of individual and often limited views, followed almost as a matter of course.

A good illustration of this is furnished by two modern writers on gout, the late Dr. Gairdner and Dr. Garrod. We have already seen that these authors differ with regard to the pathology of the disease: the former maintaining that it is due to venous congestion, and the latter to the presence of an excess of urate of soda in the blood.

Now there can be no doubt that *both* these conditions exist in the gouty subject; and each of the authors in question, if he had availed himself of the explanation of the disease given by the other, would have produced a more complete and philosophical pathological theory than that which either has now actually presented to us. I think it may be assumed that a venous congestion would not be likely to occur to any injurious extent, unless the blood were contaminated by the presence of some agent which was of itself one of the proximate causes of the venous congestion. Nor would any such agent be generated or retained in any quantity if the secreting and eliminating organs of the body had relieved the congestion by the efficient performance of their several functions. It is most unquestionably true that the *immediate* origin of a fit of gout is owing to a mechanical interruption of the circulation; that the pain experienced during the fit is dependent upon the amount of red blood which the capillaries receive, and that the richer the blood in fibrin and in red corpuscles, so much the greater will be the pain. This is owing to the more solid elements of the blood being forced into minute vessels which press upon the adjacent nerves, and according to the solidity of their contents render the pain more or less acute. On the other hand the more deficient the blood is in these elements, the less will be the pain experienced in a fit of gout, and the greater will be the amount of œdema from the effusion of serum.

It is well known that a congested or hyperæmic condition of the viscera and a loaded state of the blood vessels is very unfavourable to secretion, and Dr. Gairdner most acutely remarks that, "when this condition exists the functions of the body are imperfectly

performed under such oppression. The consequences are a diminished flow of bile and loaded bowels; suppression of the matters usually evacuated by the kidneys; the disappearance of the unctuous moisture which bedews the interstices of the fingers, toes, and armpits; and a rapid addition to the general plethora. The heart now feels the unusual load, and by palpitation and struggle seeks to rid itself of an incumbrance; the veins become more turgid, the foot grows tender, the valves lose their office, and the capillaries must sustain unaided the whole weight of the superincumbent column of blood. If this state be not checked, a paroxysm of the disease soon occurs. This termination is sometimes promoted by standing on the affected limb, sometimes by the heat of the bed during sleep. The pain of the fit continues unabated until the swelling and œdema begin; in fact, till the strained and distended vessels have relieved themselves by the extravasation of their fluids. Patients even observe that the relief of the pain is coetaneous with the appearance of œdema and the return of moisture to the skin; the swelling, so long as it is dry, hard, and elastic, affording no relief. At the same time, the solid matters of the urine begin to re-appear in that secretion, and the bowels, which hitherto have required the strongest cathartics to move them, are now readily opened by the gentlest aperients; the flow of bile, in fact, is re-established." Dr. Gairdner concludes his view of the cause of gout by expressing his belief that "this is the true *ratio signorum* of a fit of the gout. Its alliance is with varix, hæmorrhage, and apoplexy. It cannot be classed with pyrexia and neurosis."

Dr. Gairdner thus endeavours to establish what may fairly be called a mechanical doctrine of the disease, and maintains that a state of congestion must necessarily exist prior to and during a paroxysm. He refers indeed to the various manifest antecedents of an attack; but appears to attach less importance to these than to his hypothesis of an interruption in the venous and arterial circulation. He practically ignores the great change that has taken place in the composition and

qualities of gouty blood, a change that is sufficient to poison the fluids and solids of the entire body. His refusal to class gout with pyrexia and neurosis is either a mere way of stating a case, or it involves the non-recognition of obvious facts. The pyrexial and neurotic elements in gout are not to be overlooked or mistaken. In a robust person the fever attendant upon a paroxysm commonly "runs high;" and in all persons its degree will be in proportion to the character of the blood. When this is rich, the gout will be acute; when poor, sub-acute; and we usually observe that the intensity of the fever diminishes in successive attacks, as the blood becomes more and more deteriorated under the continual influence of the disease. With regard to the assumed connexion of gout with varix, hæmorrhage, and apoplexy, it is certain that such maladies are frequently observed in persons of a gouty constitution; but experience teaches that the same conditions are also constantly witnessed when there is no evidence that gout is present in the system. Each of them may be traced to some of those primary departures from a healthy state of the body which are common to gout and many other diseases. A constipated state of bowels arises from torpor of the liver, or an impaired action of the kidneys; and a consequent deterioration of the blood favours the occurrence of varix, hæmorrhage, and apoplexy. Abdominal vascular plethora, arising from whatever causes, is equally productive of either.

And although we may admit the importance of a congested condition of vital organs as a link in the chain of gouty morbid action, and may acknowledge a debt to Dr. Gairdner for the earnestness with which he has called attention to the existence of this state and to its consequences, yet we cannot admit that there is any foundation in pathology for regarding congestion in any case as an initial phenomenon, or as, in itself, a cause of morbid action. For example, the blood stasis that occurs in the lungs during suffocation is not an initial phenomenon, but simply a result of the arrest of a physiological change; and it is not itself the cause of death, which depends upon the retention of carbonic

acid and other substances in the blood. And experiment has abundantly shown that congestion, say such as is produced by paralysis of, or injury to, the cervical sympathetic, may exist unchanged for months or even years, without producing any other alteration in the parts that are affected by it. The blood stasis of gout is probably always due to the arrest of local physiological action; and the consequent symptoms to the want of that action, and not to the blood stasis itself. At the same time the fact of the frequent occurrence of blood stasis must be admitted, and its importance fully recognised. It clearly places a difficulty in the way of the re-establishment of healthy local action, and it calls upon the practitioner to employ all his resources for its relief. If Dr. Gairdner, while dwelling upon it, had dwelt also upon the influence of the depraved condition of the blood, and upon the impairment or arrest of some of the great excretory functions of the body, he would have done something to render his pathology more complete. But he, in common with many who have devoted their talents and energies to a particular subject, and who have conceived a theory with regard to it, is often over-anxious to make everything square with his especial views. Such persons, as George Coleman remarks of over-careful mothers, "cuddle their children till they overlay them." A defect of this nature unconsciously defeats its objects; for the inquirer who refuses due attention to the experience of others weakens the chain of reasoning which he endeavours to form: and the weakness thus produced in a single link is too often regarded as a measure of the strength of the whole.

If we turn now to Dr. Garrod, as a representative of the chemical school, we find that he differs entirely from Dr. Gairdner; and it is impossible not to feel some regret that two authors, who have treated the same subject with so much learning, labour, and skill, should be in opposition to one another on points of great practical importance, which seem to involve fundamental principles of pathology and therapeutics. Dr. Garrod contends, with as much vigour as that displayed by Dr. Gairdner, for the superiority of his theory of

gout over any other that has hitherto been advanced ; and he maintains that the disease is entirely due to the presence of urate of soda in the blood. We shall see hereafter whether it may not be possible to throw a bridge over the chasm by which the two forms of doctrine are apparently separated from each other.

Dr. Garrod, in his work on Gout, p. 312, disputes the pathological views entertained by Dr. Gairdner, and proceeds to state his objections to them as follows :—
“First, as regards the general state of vascular plethora of the great chylopoetic organs which he says is always met with. In gout, especially if acquired and occurring in robust patients, a state of plethora of the abdominal organs is generally present before the attack, and then there is a fulness of the right hypochondrium and epigastrium, sluggish bowels, defective excretion of bile, and dyspepsia ; but that these symptoms are constant I much question, and can bring forward records of numerous cases in which there was no evidence of any congestion of the organs connected with the portal system ; such absence is generally seen in spare subjects, and in those who strongly inherit the disease, and in whom we shall find, as we proceed further in our investigations, the kidneys, rather than the liver, are defective in their action.”

Dr. Garrod, it will be perceived, admits that a state of general plethora of the abdominal organs is present in robust patients whose gout is acquired, but disputes the occurrence of such a condition in those who are thin, and who have inherited gout ; and he leans more to defective action of the kidneys as being instrumental in producing the disease, than to previous derangement of function existing in the liver.

My own observations on these points do not accord with those of Dr. Garrod, for although there is no doubt that a corpulent, robust, and plethoric individual will show more marked signs of engorgement than will be discoverable in a thin person in whom gout is hereditary, yet the latter is equally obnoxious to the condition, although it may not at first sight be so apparent. If we make such a patient stand upright, it will be found

(at least it has been so in all the instances I have observed) that the veins of the legs, ankles, and feet, more especially in the limb most affected, are so distended that in some instances they seem ready to burst. This condition can be referred to no other cause than the existence of abdominal plethora; for upon relief being afforded to the bowels, the mechanical interruption to the circulation passes away. A spontaneous diarrhœa will occasion a similar result, and, as we know, it oftentimes appears to prevent the occurrence of a gouty paroxysm.

It may be quite true, as Dr. Garrod observes, that no hepatic enlargement or engorgement is discoverable in certain cases, but it is more than probable, judging from the operation of medicines, that in these cases the gall-bladder has been distended, and is in a state of occlusion. We have no means of ascertaining this directly; but it may be regarded as a fair induction from the fact that one of the chief culminating causes of an attack of gout is a partial or entire cessation of the flow of bile into the intestines; since we find that immediate relief is afforded to the more serious symptoms when this flow is re-established, and the bowels are fairly acted upon, more especially when symptoms are present which involve the integrity of the cerebral functions or the action of the heart. The bile that is passed under these circumstances is sometimes so acrid and corrosive that the patients liken it to scalding pitch; and there is no doubt that this vitiated secretion produces a spasm of the neck of the gall-bladder, and for a time prevents the escape of its contents into the intestines. Dr. Garrod contends, equally with Dr. Gairdner, that defective action of the kidneys is one of the chief causes which induce gout, but neither of these authors has attributed this defective action to primary disorder existing in the liver, which, when it has been rendered incapable, from long continued congestion or enlargement, of exercising its proper eliminating function, throws a task upon the kidneys which their peculiar organization is not calculated to perform without injury to their structure. The passage of the bile pigment

taurine, leucine, etc., through these delicate organs proves most inimical to their integrity. From attentive and careful observation of diseases affecting the kidneys, I have repeatedly noticed that such diseases have been preceded by symptoms of derangement of the liver: and that when renal mischief has once become established, the symptoms of hepatic disorder often disappear. In like manner, when consumption occurs from sympathetic action with diseased liver (*Phthisis biliosa*), this organ appears to resume much of its normal function when morbid changes have taken place in the lungs. It may be that analogous occurrences in other forms of disease explain why so little attention is directed to the action of the liver in the animal economy; for when such an affection as Bright's disease, for example, is once established, the symptoms directly referable to it are so marked that they are regarded as originating from primary defects in the organs then immediately implicated, to the practical exclusion of prior maladies elsewhere. It must be acknowledged that there is often insuperable difficulty in the way of ascertaining the previous history of a person suffering from a renal disorder; and this too often tends to add additional obscurity to the *causæ morborum*. I believe, however, that those who study the subject will obtain the strongest presumptive evidence of the frequent occurrence of the primary disorder in the liver, from the beneficial results that will follow the maintenance of a healthy action of this viscus; for, in proportion as we are able to attain this object by the use of the various hygienic and other means at our command, we shall find that gout, and other diseases of a serious kind, will be kept in abeyance or altogether prevented. It cannot be denied that in the present day the study of the diseases of the kidneys has to a great extent superseded the attention once paid to those of the liver, although much has been done by Budd, Frerichs, and others towards the elucidation of the latter. The information afforded by chemical analysis of the urine, and the structural derangements discoverable in the kidneys by the microscope, lend the charm of precision to the

study of renal diseases, while our knowledge of the functions and derangements of the liver is conjectural, hypothetical, and tentative.

It is on this account all the more important that we should not overlook or under-estimate the powerful influence exercised upon the animal economy, in health and disease, by this organ, which from its large size is clearly destined to discharge an important function, and one that cannot be suspended or perverted without serious consequences.

If we now proceed to the investigation of the doctrines that Dr. Garrod offers us as his substitute for those that he would overthrow, we find them very concisely stated in the ten propositions already quoted at page 27. It is probable that no one would venture to dispute the correctness of the first three of these propositions, which from the labour and skill involved in their elucidation, entitle Dr. Garrod to the best thanks of his professional brethren ; but it is nevertheless quite possible to differ from him with regard to the conclusions that he has deduced from his discovery of the presence of an excess of urate of soda in the blood of gouty subjects, and to maintain that something more than this excess is required in order to explain the phenomena in an attack of genuine gout. In the fourth and fifth propositions Dr. Garrod states that the deposited urate of soda may be looked upon as the *cause*, and not the effect of the malady, and that the inflammation which occurs in the gouty paroxysm tends to the destruction of this product in the blood of the inflamed part, and consequently in that of the system generally.

Now, admitting that gouty blood invariably possesses an abnormal quantity of urate of soda, I cannot coincide with Dr. Garrod's opinion that the specific inflammation is solely due to the excess of this material, or that the material itself is destroyed by the inflammation. If the presence of an excess of urate of soda were the only evidence of derangement in the blood during an attack of gout, it might be possible to receive Dr. Garrod's explanation without any dissent ; but as we know that blood drawn during a gouty paroxysm invariably pre-

sents the two well marked characters of a buffy coat on the coagulum, and a more or less yellow hue of the serum, it is difficult to divest our minds of the belief that these abnormal conditions must also in some manner be associated with the occurrence of the malady. The first of them, the buffy coat, is a sign of the presence of inflammation; and in proportion to the severity of the inflammation, so will the buffy coat be more or less pronounced. It is also found on the blood of persons suffering from acute rheumatism, in which the surface of the clot may be both buffed and cupped. This condition of blood is due to the presence of an excess of fibrin, which element is always found in an increased quantity when inflammation occurs; and it is observed that, upon the reduction of the fibrin to the natural standard by elimination or oxydization, the inflammation forthwith subsides.

It is well known that the severity of pain in gout is regulated by the richness or poorness of the blood of the patient, and this is to be explained by reference to a simple dynamic law, that the richer and thicker the fluid that is forced into the capillaries, the greater will be the force required for its propulsion; and hence the most severe will be the pain in the subjacent nerves from the fluid pressing on them, and the greater will be the heat and redness consequent upon the action. On the other hand, we know that those individuals who labour under "poor gout," or "dumb gout," as it has been appropriately called, suffer far less pain in their attacks. This is owing to the absence of inflammation; and a state of œdema or swelling of the part affected characterises these seizures. The blood of such persons is deficient in the fibrin which appears to be so essential to the occurrence of inflammation; and the disease is then assuming more of the hydropic than of the inflammatory character. If an excess of urate of soda pervades the blood of those who suffer from this form of gout, it will not be by the de-oxydizing process of inflammation that it will be eliminated from their systems. Neither can I coincide in the opinion entertained by Dr. Garrod, that the inflammation which occurs during the gouty

paroxysm tends to the destruction of the urate of soda in the blood of the inflamed part, and consequently in that of the system generally. It is very difficult to comprehend how a small patch of inflammation, say on the great toe, could effect so great a revolution and alteration in the entire mass of the circulating blood as to free the body from an excess of this salt. One or other of the three great emunctories,, or more than one of them, must surely be called upon to effect this object.

The second character observable in the blood drawn from a person suffering from gouty inflammation is the colour of its serum, which instead of being limpid, is of a yellow or greenish hue. This change is owing, I conceive, to a defective action of the liver. The colour is evidently due to bile-pigment, which has failed to pass from the system by the ordinary channel, and has become incorporated with the mass of the blood. If this be the case with the colouring matter, it is not too much to assume that other elements of the bile will also be found in the blood—elements which are inimical to its integrity, and which the excreting function of the liver should have removed from the system. It is rare to see a person at the commencement of an attack of gout, without noticing unmistakable evidence of co-existing biliary derangement, as shown by the colour of the skin. In the less marked cases, a yellow tinge will nearly always be visible about the angles of the mouth, and at the chin. This colouring matter must have been deposited from the blood. It therefore, seems as if a defective action of the liver, in failing to eliminate from the blood those elements which it is its especial function to remove, would prove to be at least one of the sources from whence gout is derived.

The state of the tongue, besides skin colouration, often furnishes a valuable index of hepatic derangement or congestion; for when these conditions are present, it is generally found to be more or less coated by a yellow-ochre coloured fur.

In his sixth proposition, Dr. Garrod states that the kidneys are implicated in gout, probably in its early,

certainly in its chronic stages, and of the truth of this there can be no question. These organs cannot be expected to maintain either healthy action or freedom from organic change of structure, when they have been supplied, probably for some years, with blood containing an excess of noxious elements which they never should have been permitted to receive, but which ought to have been discharged from the body, either by the skin or the bowels. The tendency to disease of the kidneys is much influenced by the description of treatment employed for the cure of a gouty attack. If care is not taken to remove from them the load which is the result of an impure description of blood, and to transfer it elsewhere, a frequent repetition of gouty paroxysms unquestionably terminates eventually in the production of organic renal changes.

In his seventh proposition, Dr. Garrod says that the impurity of blood arises principally from the presence of urate of soda, and that this is the probable cause of the many anomalous symptoms to which gouty subjects are liable. The foregoing observations with regard to the condition of the blood in gouty subjects, would lead us to infer that there are other noxious elements contained in this fluid besides urate of soda, and that these, it is more than probable, exercise considerable influence in determining the gouty seizure. To rely entirely on Dr. Garrod's opinion that a gouty seizure is mainly due to urate of soda in the blood, and that the presence of this salt in excess is the phenomenon in which the disease has its origin, would be to take a very narrow view of a very wide subject, and to remain in nearly the same position with regard to our knowledge of the real cause of the disease as that of our predecessors for so many generations. With all respect for Dr. Garrod, and with much admiration for his excellent work on gout, I cannot conceal from myself that he has taken too limited a view of the causation of the disease, and that he has confined his inquiries to those parts of his subject which admit of elucidation by the aid of chemical analysis, such as the state of the urine or of the serum of the blood; but that he has

well nigh overlooked the important function performed by the liver, which he has regarded almost as if it did not form part of the human organism. I am quite aware that this omission may be attributed in great part to the spirit of the age in which we live, which requires proof of all that is asserted by medical or other writers, and demands that nothing shall be left to the imagination. Even inductions are not admissible unless supported by tangible evidence ; and hence it is that the liver, the largest gland in the body, because its peculiar function in pouring its secretion into the intestines, to be mixed with the materials to be ejected, prohibits such an analysis of the bile as may easily be made of the urine, has come to be considered of but slight importance in the causation of disease when compared with the renal excretory function, the results of which are more accessible.

Dr. Garrod has enlightened us as to the nature of the product—urate of soda—which pervades the blood of the gouty, and has expressed the opinion that a gouty paroxysm is owing to a temporary or permanent incapacity on the part of the kidneys to remove the excess of this morbid element. Here he stops ; and the question naturally arises, how is it that gout is not more common than we see it, when the assigned causes for its production are latent in all constitutions ? It has been asserted that uric acid is not confined to the blood of the gouty, and that the serum of the blood contains urate of soda in other diseases than gout ; if this be so, what is it that produces gout in one person and not in another, when both, apparently, are precisely in the same condition ?

The same answer may be advanced to both these inquiries :—it is owing to a disturbance of the equilibrium existing in the excreting functions of the skin, bowels, and kidneys. This is most observable in those persons who are hereditarily disposed to gout. In them the balance is more easily deranged in consequence of previous defects in their assimilating organs.

A copious diuresis, sudation, or catharsis will frequently prevent a threatened attack of gout from taking

place, Any one of these great excreting functions when in excess, may serve this purpose; and why is this? The replies of different writers will be the expressions of their various pathological views. The correction of the peccant humours, of the ancients; the expulsion of the excrementitious juices that lie concealed in the veins, of Sydenham; the increased freedom afforded to the nervous system as the primary moving power of the body, of Cullen; the correction of hepatic derangement, of Scudamore; the removal of vascular plethora, of Gairdner; the elimination of urate of soda from the blood, of Garrod, etc., etc. :—all of these hypothesis are more or less expressive of a belief in the existence of a morbid material affecting the system, upon the removal of which the termination of a gouty paroxysm depends.

Dr. Garrod considers that the discussion of his eighth proposition is of much interest and considerable importance, for he says, "If we can prove the truth of the statement that the predisposing causes are of different kinds, one leading to the increased *formation* of the morbid matter, the other to its *retention* in the blood, we at once have a clue to the varieties of the disease popularly known as the rich and the poor man's gout. As it has been shown that the inflammation is invariably accompanied by the deposition of urate of soda, which may be regarded as its cause, it is evident that any circumstance which favours the accumulation of this salt in the system, and thereby paves the way for its infiltration into the articular tissues, becomes a predisposing cause, whether this arises from its augmented formation and the consequent overtaxing of the renal organs, or whether the excreting powers of the kidneys be simply impeded in their normal function." Dr. Garrod concludes by saying, "It appears probable, that in the majority of cases of gout both causes are in operation; but, on the other hand, it is easy to conceive that either, if active, might lead to the production of the disease. In the former case the affection would be typical of the rich man's gout, in the latter of the poor man's."

I think Dr. Garrod has in this proposition failed to explain what he must have felt to be a stumbling-block—the difference between a rich and a poor man's gout; for it assumes the character of begging the question to ask us to believe that the predisposing causes are of different kinds; when he has so strongly urged that the deposited urate of soda must be looked upon as *the cause* and not as the effect of the gouty inflammation. This hypothesis may serve to explain the rich man's gout, but neither it, nor the increased *formation* of the morbid matter, nor its *retention* in the blood will explain the differences existing in the two forms of this disease. In the rich man's gout there is unquestioned inflammation, with acute pain, and Dr. Garrod is of opinion that the inflammation tends to the destruction of the urate of soda in the blood of the part. In the poor man's gout there is next to no inflammation, always more or less œdema, and comparatively no pain. It cannot, therefore, be said that in such cases the excess of urate of soda in the blood, which is the presumed cause of a gouty attack, can be destroyed by inflammation. The facts of clinical experience require the addition of some other cause or causes, in order to furnish us with a clear and satisfactory elucidation of the pathology of this disease.

I venture to think that a partial solution of the problem may be obtained if we advance an additional step in the direction Dr. Garrod has pointed out to us, and in which he has been so able a pioneer: if we take into consideration the condition of one of the most essential elements of the blood, namely, the fibrine, and inquire whether this constituent may not after all be largely concerned in the production of gout, and whether its quantity in the fluid may not afford us an insight into the difference existing between a rich and a poor man's gout.

The correctness of this observation will be manifest to those medical men who have had opportunities of watching the progress of gout, from its commencement to its termination, in those persons who have succumbed to the malady. For the first few years of the invasion

of the disease, the gouty attacks would probably be of a decidedly inflammatory nature ; but as the patients have advanced in life, the attacks have been frequent, the character of the disease has changed, and the rich man's gout has been replaced by the poor man's gout, as the vital powers of the patient have become exhausted by the wearing influence of the disorder. That this condition is in the majority of instances brought about by the conduct of the patients themselves is indisputable ; but some portion of the result may perhaps sometimes be attributed to the erroneous but well-meant efforts of medical practitioners, who have striven more to relieve the patient of pain in his earlier attacks, by the administration of colchicum, than to induce him to submit to the slower but surer process of the elimination of the gouty poison from the system by the use of remedies of a more salutary description, and which do not entail irreparable mischief upon the constitution.

After what has been already advanced, it is unnecessary to discuss Dr. Garrod's ninth and tenth propositions, although exception may be taken to the dictum he pronounces, that "every paroxysm of gout is attended with a deposit." It is requisite, however, to notice his subsequent observations upon Sir Henry Holland's remarks, that a difficulty in the history of gout, and one not easily reconcilable with the view that the disease is dependent on a *materies morbi*, is the fact of the frequent suffering of some joint from gouty pain and swelling, without any well-marked symptoms to give warning of their approach ; for it is necessary to explain how the matter, capable by accumulation of producing an attack, should have been dormant up to the time of the seizure ; and why, latent thus long, it should suddenly show itself in the production of acute disease. These questions, he confesses, could not be answered at the time he wrote. Dr. Garrod undertakes to reply to them, and considers their solution a very easy task. He considers that he has shown that the mere accumulation of the urate is unequal to the production of inflammation, and that its actual deposition

in tissue is essential. Such deposition usually requires a peculiar exciting cause ; and hence, in many cases, there may be no well marked symptoms to give warning of the approach of a fit. Hence also the poison may lie dormant for a considerable time, but, when crystallization of the salt takes place in any tissue, inflammation is suddenly lit up by its presence, and a paroxysm of gout ensues. The ingenuity of this explanation rests on the assumption that when crystallization of the urate of soda takes place in any tissue inflammation is suddenly lit up. Of this Dr. Garrod affords us no proof, and the doctrine is irreconcilable with the occurrence of gout of the asthenic kind, devoid of inflammatory action.

There is a serious *primâ facie* objection to any system of explaining the origin of the various intricate symptoms attendant on a disease like gout by a single paramount influence, such as an excess of urate of soda in the blood, and this objection may make itself manifest in two ways. The first is that a narrow and limited view of pathology restricts inquiry from passing beyond the assumed exciting cause, and fails to take into account the remote influences, of which there are usually many, that have conspired to foster the disease. The second is the influence that such a limitation of view exercises upon treatment ; for the process of cure must be made dependent on the elimination from the system of the supposed *causa morbi*, without due weight being given to the defects that have contributed towards the one detectable error, which would never have been established had the various secreting and excreting organs of the body performed their duty.

The mode in which Sir Henry Holland has framed his question is open to objection ; for he assumes that a gouty paroxysm may occur without any well marked symptoms to give warning of the attack. This implies a deficiency that has no place in the faithful telegraphy by which the action of all untoward influences is proclaimed prior to the occurrence of the disease. It may be said that disease never occurs without premonitory warnings. These warnings may indeed be slight, but

they are usually proportionate to the gravity of the impending mischief. I will venture to assert that no person has ever suffered an attack of gout without having previously, for a longer or shorter time, been conscious of feelings which were abnormal, and different from those of health. Such feelings may have been disregarded by the patient, but they have nevertheless existed. An examination of them would discover evidence of a failure more or less complete of the excreting and secreting functions; *malaise*, despondency, or unnatural mental excitement; anorexia, or an excess of appetite, increased action of the heart, or a diminished power of the organ, with or without palpitation, vertigo, heartburn, and other kindred evils.

When Dr. Garrod expresses the opinion that "gout would appear at least to depend on a loss of power (temporary or permanent) of the uric acid excreting function of the kidneys," it is evident that he regards this pathological defect as one of the chief causes of the disease, instead of such paresis being the result, as I venture to think it is, of other distinctly recognisable errors occurring elsewhere. I feel more bold to differ from Dr. Garrod on this point, because it is one which cannot be too much considered in its practical bearing upon treatment. The chief emunctories of the body are the skin, the bowels, and the kidneys, and when a stoppage of the healthy action of any one of these takes place, unless it is at once corrected by increased activity of the others, disease must inevitably follow; the direct result being congestion of one or more vital parts, which may be succeeded by inflammation, fever, etc. A stasis of blood occurring in any vital organ, such as the liver for instance, at once produces a derangement of the circulation of the blood throughout the whole system: and unless this is relieved, every other part of the body, and especially every excreting gland speedily becomes disordered in its function. An excellent illustration of this is afforded in scarlet fever, by the congestion which so frequently takes place in the kidneys and produces dropsy, and by the relief afforded to this form of disease by exciting free cutaneous action,

and by maintaining at the same time a gentle catharsis, so as to make the skin and bowels accomplish that work of elimination which the overburned and congested kidneys are unable to perform. Equally grave consequence although of a different kind, may ensue from retention of foul matter in the bowels, when either the skin or kidneys are defective in their excreting function. The circulation becomes impeded, the entire machinery of the body clogged, and the brain oppressed. Acute headache is the index of this oppression, which may terminate in apoplexy as a result of the congestion.

Dr. Garrod alludes to the vicarious discharge of urea that takes place in dropsical effusions. I have seen instances of this kind, but in all of them the liver was the organ primarily diseased, and the kidneys were secondarily affected. In one case, that of a clergyman who had an extensive fibroid growth in the liver for seven years, which ultimately led to a disease of the kidneys and dropsy, the urea discharged by the skin was so considerable in quantity and so deep in colour, that his night dress looked as if it had been stained with blood, and realized the conception of a "bloody sweat." In a few severe cases of rheumatic fever, where the heart or its membranes have been affected, and in some cases of hydrocephalus, I have also noticed a copious discharge of this red pigment in the urine; and in all these instances observation has revealed more or less hepatic derangement. The natural outlet for the discharge of an excess of urea from the system is by the bowels, but if their action should fail, in consequence of a deficient flow of bile, the kidneys become the compensating channels of elimination, and often suffer in consequence of the task imposed upon them.

Another distinguished representative of the same school in medicine is the late Dr. Bence Jones, who, in his valuable work on Pathology and Therapeutics (Churchill, 1867,) takes quite a chemical and mechanical view of the origin of gout. He may be considered the chief exponent of the opinions entertained by the

workers in animal chemistry of his day, and I will therefore lay before the reader his views, which comprise the most recent theory of the cause of gout.

Dr. Bence Jones, at page 125, says, "The gouty diathesis consists in an excess of urate of soda, not only in the serum of the blood, but in the fluid that diffuses from it into all the vascular and non-vascular textures of the body. An attack of gout is a chemical process of oxidation set up in the part where the urates are most able or liable to accumulate. By the oxidizing action the urates are wholly or partly changed into urea and carbonates, which can more readily pass from the textures into the blood and be excreted by the kidneys, skin, and lungs. The oxidation, even in the bloodless textures, causes increased flow of blood and mechanical pressure into the vessels nearest to the inflamed part, and hence pain and redness, and then swelling and œdema, proceed. Though the gouty diathesis is a *disease of the textures as well as of the blood*, yet in its origin and situation, an attack of gout is even more a disease of the tissues than a disease in the blood."

I have put some of the above in italics to mark the close approximation existing between the opinion of the cause of gout entertained by Sydenham, more than two hundred years ago, and that of Dr. Bence Jones in the present day. Sydenham declares gout to be "a disease of the fluids and solids of the body," and the coincidence goes far to establish the truth of the humoral pathology as it was entertained by him. I now proceed with my quotation:—

"The urate of soda bears the same relation to gout that sugar does to diabetes; and as the want of the oxidation of sugar is the cause of the diabetic diathesis, so the want of the oxidation of the urates, and their constant accumulation in the textures and blood, is the cause of the gouty diathesis. Errors excepted, as almost every grain of starch passes through the stage of sugar, so almost every grain of albuminous substance that enters the blood sooner or later, in its way out, passes through the stage of uric acid, and if thoroughly oxidized, escapes as urea, carbonic acid, and water.

The number of substances that are formed between albumen and urea are vastly more than between starch and carbonic acid ; but whatever their number, there must be an ante-penultimate, and uric acid is the penultimate, and urea the ultimate product of oxidation. Hence there are at least two ways in which an excess of uric acid may occur in the blood and textures ; first, from the excess of animal or vegetable albuminous food entering the system, *i.e.*, from excessive production ; and second, from an arrest of oxidation, *i.e.*, from want of destruction. Of course, the greatest accumulation of uric acid will occur when the albuminous food is excessive, and when at the same time the oxidation is least. Even if no excess of albuminous food is taken, yet if the oxidizing action is deficient, uric acid may accumulate in the serum, and it will immediately diffuse even in the bloodless textures. On the other hand, an excess of albuminous food may be taken, accumulation of uric acid in the blood or textures may occur. It is therefore evident there are two modes of preventing the gouty diathesis ; first. by diminishing the amount of vegetable and animal albuminous food ; and second, by promoting oxidation. In other words, the smallest amount of food and the greatest amount of air are antidotes for the gouty diathesis. If an excess of fresh air is taken whilst a large quantity of food is eaten, these cause no gouty diathesis as long as the antidote (oxygen) destroys the *materies morbi* (urates, or the substance out of which the urates are formed) ; but if from any cause the oxidation becomes less, the future or formed urates accumulate in the liquor sanguinis, and pass by diffusion into and around the cells of all the vascular and non-vascular structures of the body, and remain unoxidized where there is least oxidation, and even form crystals of urate of soda in consequence of the slow deposition of the urates on the surface and within the structure of the non-vascular cartilages. Where urate of soda accumulates, it acts like a foreign body, increasing friction setting up irritation and inflammation, by which the uric acid is more or less oxidized, and thus being made soluble, it is

more or less removed, and when the inflammation subsides, effused fibrin almost alone may remain to mark the situation of the attack.

“If no inflammation comes on, the liquor sanguinis may free itself of urates by the kidneys, and then the deposited crystals may more or less entirely re-dissolve, and diffuse back into the blood; or, if the serum continues full of urates, the chalk-stones may gradually increase in the direction of least resistance, making the joints more and more rigid, and the skin more and more thin, until the pressure breaks the surface, and the chalk-stones escape as myriads of microscopic crystals. Thus, the fingers and toes may become supplementary kidneys, to the great relief of the blood and textures, and the gouty diathesis may almost be considered as microscopic gravel in the textures, and an attack of gout as a chemical operation for the removal of the gravel from the part in which it had accumulated.”

It would be impossible for any person to read this ingenious explanation of the cause of gout without admiration of its plausibility; and it seems at first sight to leave nothing more for us to learn. To the inexperienced it can hardly fail to appear absolutely satisfactory; but there are certain omissions in the recital which will be discovered by practical men who have seen much of the malady. In order to render the picture complete, it should give an account of the influence exerted by the liver in producing or favouring those chemical changes in the blood and secretions which are so intimately connected with the production of gout. This influence is totally left out of sight in a hypothesis that rests only on the combined chemical action of the kidneys, skin, and lungs. Neither is due weight given to the influence exercised by the heart, when its function is disturbed by its being called upon to circulate blood of a morbid description through the vascular system. Nor are the functions of the alimentary canal referred to, although these may be regarded as superior in importance, and in the extent of their eliminating power, to those of either the kidneys, the skin, or the lungs, as regards relieving

the body from any excess of urates or other effete materials which may be generated in the system from over-nutrition or imperfect assimilation.

I would not venture to dispute the correctness of Dr. Bence Jones's theory of the chemical actions that take place during the processes of oxidation and decarboxation; but it appears to me that some further explanation is required, independently of these chemical operations, to give us a more perfect theory of gout, and what is of still greater importance, more sound and correct views as to the right manner of treating the disease. It may be indisputable, as contended both by Dr. Bence Jones and Dr. Garrod, that an excess of urate of soda in the blood is the cause of the gouty paroxysm, and that the elimination of this morbid product from the system is the means of curing the disease; but the acquisition of this knowledge does no more towards enlightening us about the more profound causes than was done many years ago by Dr. Wollaston, when he discovered that the blood of gouty persons abounded in uric acid.

A gouty state of blood may continue for an indefinite time, although a paroxysm of gout may never be developed. The entire functions of the body will be more or less affected by the impurity or poison circulating in the blood; but the knowledge we wish to obtain is, what is the immediate exciting cause of the gouty paroxysm.

Neither Dr. Bence Jones nor Dr. Garrod informs us why an excess of urate of soda does not always exist in the blood of those gouty persons who take the same amount of food and exercise at one time as at another; but they both believe that the retention of an excess of this salt in the system is owing mainly to a defective action of the kidneys. Dr. Bence Jones, in his chemical hypothesis, advances one step farther than Dr. Garrod, by suggesting that the non-oxidation of the urate of soda in the system is the cause of gouty inflammation, and that this inflammation is nature's effort to destroy or burn up the noxious element.

CHAPTER IV.

CAUSES (*continued.*)

THE foregoing commentary upon the views put forth by the most distinguished modern writers on gout, will have prepared the reader, if I may borrow an expression from Transatlantic politics, for the enunciation of a somewhat wider platform. I cannot assent to the proposition that gout is either a consequence of congestion, or a consequence of the retention of urate of soda in the system, or a consequence of hepatic derangement. All these conditions may concur in its production, but no one of them singly is sufficient to constitute the disease. I regard gout as being essentially a result of the imperfect elimination of excrementitious matter from the blood ; and this imperfect elimination as being due to a variety of causes, among which the chief would be impaired nervous action, congestion of blood, due to local causes, and congestion of blood, due to imperfect performance of the function of the heart. Physiology has not yet taught us to know with exactness the relations between the nervous system and the secreting organs ; and we are hardly in a position to advance beyond the admirable illustration given by the late Dr. Reid, that the nervous system bore to secretion the position of a rider to a horse ; not indeed causing the movements of the latter, but retarding, arresting, accelerating, guiding, or controlling them. We know as a fact, that the nervous system within certain limits, governs the calibre of blood vessels ; and in this governance we have one means through which it can modify the function of a gland, by modifying the quantity of blood material that is supplied to it. Over and above this, it is impossible not to believe in a

direct nervous influence on secretion ; and there are many instances, notably in various states of emotion, in which this influence is displayed in a manner not to be overlooked. Glandular congestion, due to local causes, may be produced by sedentary habits, by certain habitual positions of the body, and by circumstances which furnish the blood with an excessive quantity of any excrementitious product, a quantity greater than the appropriate organ can remove. Imperfect functional action of the heart is a fertile source of congestion proceeding in a direction opposite to that of the circulation, and producing abdominal and visceral plethora. And of all these causes there is none that does not in its turn bring the others into play. Imperfect digestion loads the blood with a chyle containing noxious matters which tax to the utmost the powers of the excreting glands for their removal. The presence of such vitiated blood is itself a cause of passive congestion of these glands ; and the congestion still further impairs their functional efficiency. The congestion due to a feeble or dilated heart has the same effect ; and it re-acts upon the heart by causing it to be supplied with unpurified blood. The initial phenomenon will to some extent determine the order of succession of the phenomena that follow it ; but will exert little influence upon their essential nature. Impaired digestion, a troubled heart, congested liver and kidneys, a blood that is loaded with effete matter, nervous centres to which this blood brings no healthy stimulus, and a general nutrition that is enfeebled by its influence, such, in short, is the aggregate which we describe as gout. It will be proper to take the various elements that go to form this aggregate in their order ; and to consider separately their several relations to the whole.

The impairment of digestion is perhaps the most universal of the ordinary precursors of gout, and it often dates from quite an early period of life. It is very apt to be attributed to this or that article of diet, rather than to want of tone of the stomach itself ; and many dyspeptics render their lives miserable, by the successive elimination from their dietary of everything

that has ever disagreed with them. The evil does not even stop at this point; for Sir Thomas Watson has placed on record the case of a gentleman who came at last to live solely on dry toast and mutton chops, and who was rewarded by an attack of scurvy for his pains. It is quite necessary for persons of weak digestion to be careful in their selection of food and drink; but they should not carry this carefulness too far, nor act upon it at all times, lest the stomach may become so pampered and squeamish that it will at last refuse to digest any but a few selected articles. I have known dyspeptics shorten their days by their over-scrupulousness; not to mention that they have led a slavish life in consequence of their self-imposed tyranny.

A friend of mine was once riding inside a public conveyance in the month of September, the only other passenger being a gentleman of sixty or thereabouts, who, although the weather was warm, was wrapped up in a thick cloak. They had not been long together when the vehicle stopped, and a hale elderly man entered it. He carried in his hand a large brown-paper bag of Orlean plums. When he had seated himself, he opened this bag, took from it a plum, and handed it to my friend, who accepted it. He then presented another to the gentleman in the cloak, who positively shuddered at the offered gift, "No, I thank you," he said, with much emotion; "those things are poison; I would not eat one for the world!" The hale man looked at him with astonishment and pity. "Ah!" he said, "I perceive the kind of person you are; your stomach is your master; now I have had my stomach for seventy-five years, and it has never mastered me yet, and it never shall." He instantly inserted a plum into his mouth to prove his words, and quietly passed the bag once more to my friend, who helped himself to another.

Now doubtless this hearty man did possess a strong and useful stomach, and doubtless he was proud of his possession, and notwithstanding his boast of mastership over it, he knew how far he might take liberties with it, and to what length he might go in trying its powers. If so, he was a discreet master, for it was amazing what

an amount of work may be obtained from even a weakly servant of this description if it is properly treated, and not overtaxed. It is the *overtaxing* the stomach that produces rebellion ; and that is, in fact, to repeat the well known saying of the late Mr. Abernethy about the chief cause of indigestion, "More is put into the oven than the oven will bake." There is no doubt that certain people have peculiarities or idiosyncrasies, and that they are incapable of eating particular kinds of food ; but every one may practically so contrive as not to deprive himself of the countless articles of food provided for us by a beneficent Creator.

There can be no question that a change of diet is as agreeable and beneficial to man as to animals. If we notice the avidity with which horses will eat green food, after being long deprived of it, we may feel sure that so manifest a craving expresses more than appears at first sight ; and that it is analogous to the occasional longing of the human subject for acids, salads, etc.

The stomach now and then requires a fillip to stimulate it to more vigorous digestion. Any unusual description of food answers this purpose, and increases the activity of the secreting power of the gastric and salivary glands ; and although the substance eaten might, if taken constantly, be productive of indigestion, yet on rare occasions it is conducive to good rather than harm ; so long, at least, as moderation rules the appetite.

Medical men frequently observe peculiar cravings in the young when they arrive at puberty. Such cravings are termed unnatural, and in a certain sense they are so ; but their existence proves that the changes occurring in the body call for a kind of food different from what had hitherto been supplied or sought for. The intensity of this desire is shown by the occasional eating of slate-pencil, cinders, and all manner of trash, as well as by the consumption of acids of all kinds, even to the most crude and unwholesome fruits.

It will invariably be found, when these strange cravings exist, that some deterioration of the blood of the patient has taken place ; and this will soon make itself manifest by deterioration of the solid structures,

for all of which the blood supplies the formative material. Wasting of the muscles is usually the first external evidence of such a change. They become flabby and weak, and the individual complains of languor, and of incapacity to pursue his or her ordinary avocations. The pulse will also be feeble; the spirits, according to the temperament more or less depressed, and the complexion palid; and if the patient is of a bilious habit, the colour will be sallow. But the best evidence will be that afforded by the tongue, and with help we shall be at no loss to discover the alteration that has occurred in the quality of the blood. The importance of these changes is such as to justify a brief digression, in order to point out that any evidences of depressed nutrition, at or about the time of puberty, should always arouse the solicitude of parents, and should always receive the most careful attention of the practitioner. It is at this period of life, and mainly in consequence of depressed nutrition, that we have to dread the commencement of tubercular deposit in the lungs; and I have no doubt that the question of prolonged life or premature death turns, in very many instances, entirely upon the prompt recognition and proper treatment of the conditions to which I have referred. That I may not appear to speak without having good ground for my assertion, I may add that I can now look back for more than thirty years at the history and progress of the numerous families which I have attended, and that I can recall no instance of consumption occurring in any one of them of whom I have had the entire medical management. I do not believe I am at all singular in being able to make this statement; nor do I doubt that the success of many other medical men, similarly situated to myself, has been fully equal to mine.

I cannot say that in none of these families consumption has ever showed itself, for it has done so in a few instances; but only when circumstances have removed the individual patients from under my immediate management at the most critical period of their lives. The foundation and seeds of the disease have then been laid and developed, and when I have been called in, I

have been able only to palliate symptoms and nothing more. It would be foreign to the scope of this volume to enter into detail with regard to the large subject at which I have thus briefly glanced ; but I was wishful to place on record my conviction of the importance of the *malaise* of the young, and of the results which may be attained by due and timely care of it. The imperfect digestion that is at its root may in many cases pass on into confirmed dyspepsia ; which, whether it be, as in such cases, a result of the gastric weakness, or, as often happens, of the ingestion of food in improper quantity or quality, is perhaps the most common initial phenomenon of gout, as it is also, in the case of a discreet and obedient patient, the one which may be most readily and most completely controlled by the art of the physician. The form of dyspepsia that most frequently leads to gout is perhaps that which arises in middle life, and in persons of vigorous frame, who have habitually taken more food than the waste of their bodies has required. The amount of food that one person can eat is no guide for another. Some have very strong powers of digestion, so that neither quantity nor kind appears to come amiss to them ; and nothing creates more envy in the mind of a dyspeptic than to witness his neighbour at a dinner table enjoying articles of diet which his own former experience has taught him to eschew with horror. But such powers are not to be envied unless the possessors use them with discretion. If we trace the lives of those who have been thus gifted, we shall most probably find that they are brought to a close long before death calls upon those who have envied them. The cause of this is simple. A man in the enjoyment of what is termed perfect health, who has never known a day's illness, except after a debauch, becomes at last so careless about his diet that he eats and drinks whatever is set before him. He may continue in this habit for a longer or shorter period, according to the amount of mental or bodily exercise that he takes, but a time will come when Dame Nature steps in and asserts her right to be heard, by appealing against this long-continued defiance of her ordinary rules and laws.

The *bon vivant* has latterly found that he has begun to increase in weight ; he discovers that he is more protuberant in front than accords with any ideal of perfect symmetry, and his waistband presses inconveniently upon his person. He cannot move with so much agility as formerly, and he becomes what he terms a little puffy. He finds that his wind is not so good as once it was ; and he proceeds upstairs or up an ascent with much gravity and deliberation ; all his bounding lighthness of limb appearing to have deserted him. This state of things commences earlier in some than in others. In one person it may be at forty years of age, in another, who has taken more walking or riding exercise, it may be at forty-five or fifty, or even a few years later. But whenever such monitions occur, the time has arrived for the person receiving them to pause in his course, and to turn over a new leaf by changing his mode of life. It is not then too late for him to re-establish his former activity, regain his lost elasticity, and his perfection of wind or breathing. He must subject himself to a severe criticism, and ask what he has been doing that has occasioned a loss of his former powers, and he will readily find by comparing himself with others of his own age, who have been more circumspect in their conduct, that he has been living a little "too fast." If he be gifted with resolution—that most invaluable of natural blessings—he will immediately begin to reform his habits ; he will eat less and more discreetly, avoiding rich and fat articles of food ; he will possibly take three moderate meals in the day, instead of two substantial ones, with a long interval between them, to procure a better appetite for his dinner. He will carefully diminish the amount of wine he has been accustomed to drink. He will go to bed earlier and rise betimes. He will establish a certain amount of daily walking or riding exercise, and thus quietly bring himself back to his former healthy and enviable condition. He will in fact put himself into training, with the example of Louis Cornaro before his eyes, but without that person's rigid adherence to the weight of his food and other circumstances, which must have made his treatment of

himself a positive pain. In all such cases, however, it will be necessary to avoid any sudden or violent change, and any diminution of the quantity of food below what the wants of the system require. The rule to be observed is to proceed slowly and gradually to restore the lost tone of the stomach, so that the food that is consumed may be converted into healthy blood.

The participation of the heart in gout appears to arise chiefly from two primary causes :—1. A deteriorated condition of the blood ; and 2. An impaired mechanical force in its propulsion, due to congestion of the right auricle. Hence arise dilatation of the chambers, valvular disease, gouty deposits, and muscular or fatty degeneration.

If these premises are correct, as my observation would lead me to believe, the induction that may be drawn from them would serve to direct our attention to the real origin of heart disease, which, unless when it follows rheumatism, is a subject involved in great obscurity ; and would enable us in many instances to prevent such disease from occurring, by giving us timely intimation of the threatened danger. It is in the apparent insignificance of the premonitory symptoms, that this danger chiefly lies. There is rarely pain, but sometimes a transient feeling of discomfort on “the left side,” which the patient most probably attributes to some “stomach derangement,” and which, on having recourse to some stimulant or proper medicine, may be speedily dissipated. It may sometimes occur to him that he is now less disposed than formerly to take exercise, and that he prefers quiet unless stimulated by the pursuit of some favourite amusement.

His breathing during exercise is not so good as it once was, and he puffs and blows under comparatively moderate exertion ; this defect he will attribute to being out of practice or training. His heart will often beat inordinately, and it may be some time before the throbbing and palpitation subsides.

An individual may experience for years all these evidences of impaired muscular power, and may

nevertheless remain unconscious of the defects that exist in his internal organism, supposing that, although he cannot run, jump, walk, or ride as he formerly did, he is sound inside, or, as it is said, heart-whole. His digestion is not to be complained of, if he is only moderately careful, and he eats, drinks, and sleeps well. He may occasionally apply for medical advice on account of what he deems only a trifling ailment; but if his medical adviser, who is able to penetrate more deeply into the defects perceptible in his constitution, should suggest a course of medical and hygienic treatment, he will probably find some difficulty in inducing his patient to comply with the recommendation, so unconscious may he be of the nature of the mischief that is lurking within him. On the relief of his immediate feelings of oppression, he will in all likelihood pursue his usual course as regards diet and wine, or such other alcoholic fluids as he has been accustomed to take; and in this case he will probably find his attacks become of frequent occurrence, and that each succeeding one will be recovered from more slowly than its predecessors.

The opinion I have advanced with regard to the chief sources of heart disease (namely, impure blood and defective action of the organ), leads us to inquire as to the cause or causes from whence the first of these conditions arises, and in what manner the heart becomes affected in its propulsive power.

When the late Dr. Bright made his great discovery of the renal disease called after his name, a complete revolution took place in the minds of many pathologists; and some who had formerly regarded the liver as the cause of nearly every human ailment, were greatly shaken in their faith. It was clearly proved to them that dropsy, more especially, was commonly attended with albuminous urine, and arose from defective action or disease of the kidney, and not from those hepatic changes to which before Dr. Bright's time it had been so commonly ascribed.

In a pathological, anatomical, and scientific point of view, nothing in the history of disease can compare

with Dr. Bright's discovery ; but, unfortunately, this brilliant elucidation of renal disease has greatly interfered with the attention formerly paid to the influence of the liver as a cause of morbid action. After some years of careful and close observation of this influence the conviction has been forced upon me that both heart disease and kidney disease are frequently traceable to defects in the hepatic eliminating function. The consequently inefficient depuration of the blood throws a task upon the kidneys which they cannot continue to perform without suffering changes in their structure. When the liver has become enlarged, and a chronic congestion has been produced in it, the ascent of blood to the right side of the heart is impeded, and this mechanical impediment is a fertile source of ultimate organic disease in the heart itself.

A case of great interest bearing on this subject came under my observation in March, 1877. A lady, aged fifty-four, had been ill for twelve months, and had had the benefit of consulting some of our most experienced physicians. They were unanimous in the opinion that all her troubles arose from disease of her heart ; and in this view the gentleman whose patient she was, fully concurred. The chief symptoms were extreme debility and great difficulty in breathing, with entire loss of appetite and distaste for food. The tongue was clean, but very pale in colour ; and the patient looked like a person who had been bled almost to death, so waxy and anæmic was the state of her skin. Her pulse was ninety. Physical examination revealed extensive mitral valvular disease. Her liver extended to the navel, and felt as large as a pint pudding basin—or a child's head. This unnatural enlargement of the liver was considered to have arisen from disease of the heart. In this opinion I did not participate, but expressed my belief that the heart disease was the result of the enlargement of the liver, producing a mechanical interruption to the due flow of blood to its right side. My opinion being in opposition to that held by the majority of those who had seen this lady, very naturally led to a more close enquiry into her antecedents,

in order to gather from them, if possible, how it was that she became affected with heart disease. The result of this investigation confirmed the view I had expressed. There was no evidence that she had ever suffered from rheumatism, or any form of cardiac complication. Her appetite had always been good and she indulged daily in rich articles of diet,—more especially cream. She never complained of indigestion, and entertained no idea that she was doing wrong in eating rich things, as she never felt them disagree with her. Her health had always been good until the stoppage of menstruation ; an event which occurred suddenly, but which produced no change in her mode of living. She had a great dislike to medicine, and seldom took any excepting an occasional Cockle's pill.

As the treatment hitherto had been directed more especially to cardiac derangement, it was decided to apply remedies more directly to the liver, and small doses of calomel were administered every night, followed each morning by a small dose of castor-oil in brandy and water ; while a cordial saline effervescing mixture was taken during the day. This treatment was continued from the 1st March until the 26th, when the gums becoming tender, the calomel was omitted.

The liver during this time had become softer, and was much lessened in size. The appearance of the patient greatly improved. The cheeks and tongue had assumed a more healthy colour.

It is unnecessary to give a detailed report of the subsequent treatment, which continued until July, and consisted of tonics and alteratives, and was most ably carried out by this lady's regular medical attendant.

On examining the abdomen at this time, the liver could not be felt beyond its natural position, all enlargement had disappeared, and the patient presented the appearance of perfect health, and was able to resume her ordinary avocations, although the valvular disease, of course, remained unchanged.

Such a result as that which we have been considering is often distinctly traceable to a primary defect existing in the blood—the consequence of mal-assimilation of

the food taken into the stomach—which, instead of stimulating the liver to healthy action, operates on it more or less as a poison. To the consequent congested condition of the liver, the fibrinoid disease affecting this organ may often be referred.

The opinion that enlargement of the liver is usually found to co-exist with disease of the heart, is generally entertained by pathologists; and it is also held that the enlargement is due to gravitation of blood, from the incapacity of the heart to transmit this fluid through its cavities, and that hence may be explained the plethora that takes place in the portal circulation.

It must be admitted that when the *heart has become diseased*, the ascent of the blood through the vena cava to the right auricle will be impeded, and that regurgitation will take place by reason of mechanical defect in the engine of propulsion. The wave will then return upon the liver, and will occasion pressure on it, as well as upon the kidneys and a general abdominal plethora. Such results as these, however, would not occur if no disease or mechanical defect were existing in the heart.

It is a matter of the greatest importance to recognise any enlargement, or tendency to enlargement, of the liver at the earliest possible time, if we wish to prevent the development of concurrent disease of the heart. Especially in the case of persons who have overtaxed this organ at any previous time of life, whose habits of living are favourable to structural change, or who exhibit evidence of possessing a relaxed or flabby muscular fibre. The usual method of seeking hepatic enlargement by examination, in the semi-recumbent posture, is not the most favourable for a correct diagnosis. As I have already stated, the patient should be made to *stand upright*, and any increase in the volume of the liver can then be readily ascertained by palpation and percussion.

The results that follow from over taxation of the muscular and valvular structure of the heart will be presently referred to in the consideration of gymnastic exercises; but as we are not in possession of any

statistics to show the excess of mortality thence arising, every instance bearing on the consequences of such injurious practices must be considered of value. If those gentlemen who have been engaged in boat-racing were canvassed as to their own health, and that of their coadjutors, after relinquishing the exercise, and as to what had been the rate of early mortality among them, it is greatly to be feared that in no instance would it be found that the whole of any boat's crew had escaped in after-life the consequences of this excessive exercise.

A friend of mine who is physician to a life insurance office, informed me that some years ago a gentleman who wished to insure presented himself to him for medical examination. Upon inquiry into his family history the proposed insurer made this statement. "My father died comparatively young, of disease of the heart, brought on by excessive rowing. He was stroke-oar in an Oxford crew of eight, all of whom are dead. Six of that crew died of heart disease, and two of them from strangulated hernia. My father extorted a solemn promise from me and my brothers that we would never under any circumstances row in a boat, and this promise we have all adhered to." It is probable that this may be an extreme instance of an excessive amount of mortality occasioned by rowing; but if only one, instead of the whole eight, of the boat's crew had died from the injurious effects of their violent exercise (so far as *racing* is concerned,) it would furnish a striking example of the risk which is run by young and immature men, who devote themselves to such a dangerous amusement.

The habit of smoking, when indulged in to excess, is a more frequent cause of heart disease than is commonly suspected; more especially in persons of gouty diathesis, or in whom the heart has been unduly taxed at any former period. The tendency of all sedatives is to lower the action of the heart, and to diminish the force of the circulation. It is therefore not difficult to comprehend how tobacco, when smoked immoderately, operates upon the centre of the circulation, and on the

nervous, muscular, and glandular systems. A man whose blood and tissues are charged with an undue proportion of the elements which constitute the gouty diathesis, needs all the assistance of the various functions pertaining to those systems to free his organism from materials prejudicial to its welfare: instead of being able with impunity to depress his various powers by the continuous use of a sedative agent. The more healthy the blood, the less probability is there of the heart undergoing a process of muscular degeneration, or other disease, or becoming the seat of atheromatous deposit. Nor is it unfrequent to meet with instances of atheromatous deposit in arteries removed from the heart, more especially in those of the eye, the rupture of which may occasion permanent loss of vision.

Very recently a painful and ultimately fatal case, corroborative of the above observation, occurred in the person of an old friend of mine, whom thirty years ago I had vainly warned against his over-indulgence in smoking. He was subject to occasional attacks of gout, but never of a severe form. He continued his practice of excessive smoking throughout the whole of this period; he had the aspect of a strong man, but was not so, his pulse being invariably feeble, and his tongue flabby and of a relaxed muscular fibre. After a fit of sneezing he suddenly lost the sight of his left eye. There was no morbid appearance discoverable externally, but the ophthalmoscope revealed the rupture of a minute vessel. Twelve months after the loss of his sight he caught a cold, which was followed by nummular bronchitis. He would not confine himself to his bed, and in walking from his bed-room into an adjoining sitting-room he staggered, threw himself into an arm chair, and expired. A *post mortem* examination discovered, not only muscular degeneration of the fibres of the heart, but also atheromatous valvular deposit.

It would be impossible to render a faithful description of a disease like gout, which is in the strictest sense of the word constitutional, without a full consideration also of the direct physiological and pathological

influences exercised by the liver in the production of the malady.

Not only is this organ the largest secreting gland in the body, but the different functions of chyilification, sanguification, respiration, and elimination, are all more or less intimately connected with it. The defective performance of any one of these processes, more especially the last, is perhaps, the most fertile source of gout, as it is of numerous other diseases.

We have every reason to believe that the liver is the organ which assimilates those substances which have been absorbed from the intestines; and, if this be so, it is less difficult to comprehend the nature and amount of strain that is frequently put upon the organ by the excess of nitrogenous and albuminous elements which are forced upon it at times when the primary processes of digestion have been incomplete, either from deficient gastric power, or from the introduction into the stomach of too much food, or from that food being of an unsuitable description. The knowledge that uric acid is amongst the various chemical elements which have been discovered in the liver, may also be regarded as throwing light upon the gouty diathesis; since one of the salts of this acid, urate of soda, is the predominating chemical agent discoverable in gout, and with it the blood and tissues are more or less charged.

Notwithstanding the amount of research that has been devoted to investigation of the various chemical operations performed by the liver, in the hope that the elucidation of those processes would throw light upon the physiology and pathology of the organ, it must be admitted that it is frequently most difficult, even in the present day, to detect the period at which deranged function of the liver is succeeded by organic changes. The difficulty is in some measure due to the peculiar anatomical structure and position of the organ, by which it is enabled to expand and enlarge without occasioning pain, and without interfering in any marked degree with the functions of neighbouring organs. In ancient medical literature the influence of the liver in producing disease will be found occupying a place of distinguished

eminence, but within the last twenty-five or thirty years, it may be asked whether this influence has not been under-estimated? and whether we have not too readily yielded to the fascination connected with the study of kidney disease, by the aid which the microscope and chemical agents have afforded us? It may also be asked whether the positive knowledge obtained by these means has not induced us to disregard much useful and valuable information, more or less of a hypothetical kind, connected with the liver, owing to our not being in possession of equivalent means for the detection of changes in the products of its action? The most important of the known functions of the liver in the secretion of bile. The passage of this fluid into the bowels is Nature's means of relieving the system of fæcal and effete materials which would be prejudicial to it if retained; and when from any cause the secretion, or its flow, is interrupted, a congestion or plethora of some kind is almost certain to ensue. The kidneys will indeed diminish the danger consequent upon the cessation of healthy action of the liver by relieving any existing vascular plethora by diuresis; but, as I have before stated, this operation cannot be regarded otherwise than as detrimental to the structural integrity of these delicate organs. Dr. Frerichs, page 101, in his work on Disease of the Liver, in the article on Jaundice, alludes to the injury that is done to the kidneys when there is an excess of bile pigment in the blood, and shows that their texture is essentially injured thereby. He says, "in the more intense and persistent forms of this disease the structural changes are most considerable, and where the deposit of pigment is most intense, uriniferous tubes may be observed, distended with a coal-black, hard, brittle mass, which, like the material of black gallstones, is either dissolved in caustic potash slowly and incompletely, or is quite insoluble." It might be imagined, when the kidneys have been for an indefinite time called upon to eliminate from the blood a material of this description, as well as other solids and salts inimical to their structure, that their excreting function must become impaired, and that the foundation of disease must be laid.

It doubtless has occurred to many writers on gout, that so large a gland as the liver must in some manner or other exercise an influence in the production of this disease, but, probably feeling the difficulty of explaining how this could arise, they have not ventured to grapple with the subject, and have preferred to enunciate their theories of the cause of gout without taking the liver into their consideration. The endeavour to show that gout is partly or mainly owing to defective hepatic action, and that this is one of the chief causes in creating or developing the disease, must at present rest more on negative than positive evidence; since our knowledge of the chemical and physiological part performed by the organ, and of the control it exercises over the various processes of chylification, sanguification, and elimination, is still extremely limited. Until these important functions or actions are explained by the aid of chemical investigation, or other means, we are not in a position to assert that any of them when defective is a *causa morbi*.

Many circumstances combine to explain why it is so difficult to arrive at a correct understanding of the physiological and pathological errors connected with the liver; and reference to the works of those writers who have devoted themselves to this obscure subject, will show us the numerous causes of the imperfection of our present knowledge. Dr. Budd, in his excellent work on Diseases of the Liver, mentions several; amongst them are the colour and texture of the liver, which he says, "makes it difficult to detect and define in the dead body the various effects of disease, unless it has gone on to disorganization or change of structure. In the lung we can at once distinguish, from the spongy nature of its texture, the changes disease has produced, and connect them with the symptoms observed during life; but in organs naturally solid, and also nearly of the colour of blood, such as the liver and kidney, these changes and especially the traces of the various kinds of congestion and inflammation, are far less obvious to detect and discriminate."

“In the case of the kidney, the impediment which these conditions offer to the morbid anatomist is well illustrated by the fact, that a disease so common and so fatal as granular degeneration of this organ, and signalised during life by such marked symptoms as general dropsy and albuminous urine, has been left to immortalize the name of a living physician.”

This was written in 1852, during the lifetime of the late Dr. Bright.

Dr. Budd points out how much easier it is to diagnose disease when the lungs and heart are affected, than it is when the liver is the organ implicated. Of the former he says, “when the lungs are the seat of disease, we may discover by the sense of hearing whether any portion of them near the surface contains the natural quantity of air, or whether this, in whole or in part, is displaced by some denser matter; whether the surface of the pleura is roughened by fibrin, or its sac distended by fluid; whether the bronchial tubes are free, or more or less choked by secretion; and when the heart is affected, we may not only trace its outline and estimate the strength of its ventricles, but, by the same sense, penetrate its interior, and ascertain the condition of its valves. The whole physical structure of the organ is, as it were, laid open to us.”

We have it in our power, as Dr. Budd observes, “to explore the liver by touch and by percussion, but we cannot by these means of investigation, penetrate its surface, and discover changes in its consistence and texture. They only enable us, in some cases, to trace its outline, to discover any striking inequalities of its surface, and to form a tolerable estimate of its bulk. This, indeed, is valuable information, and more than we can learn of the kidneys by similar means. But in investigating the diseases of the latter organs we have the more than equivalent advantage, that day by day we can measure the quantity, and ascertain the composition, of the urine secreted; that is, we can tell precisely the manner in which their functions are performed. The secretions of the liver, on the contrary, cannot be collected and analysed during the life of the

patient ; and, indeed, until lately they could scarcely be analysed at all, as the most celebrated chemists were not even agreed as to what are the normal constituents of bile."

Dr. Budd concludes his enumeration of these difficulties by remarking, "Thus, to detect and distinguish the diseases of the liver, practitioners had little more than the signs of functional disturbance—signs, in all cases, of doubtful import, and here, if we may except that of jaundice, more than commonly obscure and equivocal. We cannot, then, feel surprised that our knowledge of these diseases should be more imperfect, our diagnosis of them less sure, and our treatment consequently more tentative and empirical, than of the diseases of any other organ of equal importance."

More recently, however, two of the impediments to the study of diseases of the liver have been in some degree removed. By the researches of chemists, we have obtained more precise knowledge of the composition and uses of bile; and by the labours of Kiernan and Bowman in this country, and of Müller and Henle in Germany, we have been taught the intimate structure of the organ ; so that now, by the naked eye or the microscope, we can distinguish the various morbid changes of its texture.

In the liver as in other organs, whether in animals or in plants, all true secretion is effected by the agency of cells ; and "however complete the structure of the secreting organ, these nucleated cells are its really operative part." In each secreting organ, the secreting cells have a peculiar power to form, or withdraw from the blood, the secretion proper to the part, and whether by bursting or dissolving, or by some unknown mode, discharge it through the excreting ducts.

If we take into consideration the large size of the liver, it is extremely probable that its functions extend far beyond the secretion of a fluid subservient to digestion. This inference is strengthened by the still greater relative size of the liver during foetal life, when the process of digestion has no existence, as well as by the comparatively small size of the pancreas, to which recent

researches have assigned the important function of dissolving the oily and fatty matters of the chyme. It will therefore not be unreasonable to suppose that, when the liver is diseased or its functions are impaired, the morbid influence produced by such conditions must prove most detrimental to the system, and tend to the creation of other diseases, and to the aggravation of those already present. And it is this view that renders us more especially desirous of ascertaining to what extent hepatic derangement may be considered instrumental in the production of gout; as it is rare to find a person who is suffering from this disease, in whom more or less derangement of the hepatic function has not preceded the attack.

In a severe fit of gout, attended with much hepatic derangement, the symptoms are generally so well marked that there is no difficulty in recognising them; and, notwithstanding their value as diagnostic signs, indicating the treatment required to subdue the malady, they prove for a time a serious addition to the sufferings of the patient.

In such instances there is every reason to infer that the liver has for some time been more or less congested, and judging from the quantity of bile frequently rejected from the stomach, the gall bladder has been in a similar condition, the bile by its intense bitterness seeming to have undergone a process of concentration. The vomiting that takes place under these circumstances depends upon bile passing into the stomach instead of pursuing its natural course into the intestines, and a feeling of emesis is created, followed by sickness, to relieve the stomach of a foreign and repulsive material. When an attack of bilious vomiting is restrained within proper limits, and aided by diluents that assist the discharge of the bile, a mechanical relief is afforded to the liver and gall-bladder, by the pressure of the diaphragm and abdominal muscles; the process bearing some resemblance to squeezing the water out of a sponge.

In individuals of ordinary strength of constitution an attack of vomiting of this nature is often a salutary

process ; but in those whose constitutions have become impaired by frequent attacks of gout, or other causes, it will not be advisable to leave them to the unassisted efforts of nature, as the vomiting must be restrained rather than encouraged, recourse being had to those remedies which will relieve the congestion of the liver and gall-bladder, and thus save the strength of the patient.

Although the symptoms that indicate the invasion of serious disease of the liver, whether it be fibrinoid disease, cirrhosis, acholia, or any other, may at first sight appear obscure ; yet they are not really so, for there is scarcely any appreciable difference between them, and the symptoms indicative of simple functional derangement of the organ. The only difference is in the length of time that the symptoms have continued without being relieved or controlled, until organic disease has at length become established ; and it is by the neglect of primary functional derangement that the foundation of an incurable malady is most frequently laid.

One of the numerous causes which serve to explain why the organic disease of the liver that is succeeded by disease of the kidneys is so frequent in the present day, is that an impaired digestive function affects the liver and produces nausea, for the relief of which recourse is too often had to some alcoholic stimulant. Unfortunately this practise favours a return of the symptom, so that resort is again had to the temporary remedy, until its use becomes an established habit, leading first to impairment of the function of the liver, and ultimately to disorganization of its structure.

The symptoms indicative of hepatic functional derangement are headache, dimness of vision, spectra, *muscæ volitantes*, yellowness of the conjunctivæ, sometimes singing in the ears, occasional giddiness, and more or less mental despondency ; a hard, dry cough, accompanied—chiefly in the morning—with grey sputa, sometimes in translucent, pearl-shaped masses, at other times diffused more copiously in dirty-coloured mucus. There is often a dryness or clamminess and bad taste in

the mouth in the morning, the tongue is more or less covered with a brown or yellow fur, and if there be much debility the edges of the tongue will be indented. The breath is sometimes offensive, at others it has an earthy smell. There is often nausea or sickness, commonly of a morning; the patient "heaves" but ejects nothing. Sometimes there is pain under the right or left shoulder blade. The appetite is often variable and capricious, frequently requiring the aid of stimulants to provoke it. There is always more or less tendency to constipation, and unusual susceptibility to changes of temperature.

There are many other symptoms, but these are sufficiently marked to aid us in diagnosis. Many of them may be present without enlargement: and this important point should always be determined by the examination already described. A review of the ordinary symptoms that precede an attack of gout will show how strikingly they resemble those produced by a congested state of liver. They are constipation, despondency, lowness of spirits, loss of appetite, and an occasional rigor, with many others which it is unnecessary to record. When medicine has been administered to stimulate the liver and produce a flow of bile from the gall-bladder, the majority of these symptoms disappear, and if gout is present the excessive violence of the pain is mitigated. The bowels by this means are made the channels from whence the system is freed from a portion of that excess of urea or its compounds with which the blood of a gouty person is loaded; and the kidneys experience a corresponding relief from the oppression occasioned by the same impurity.

It is not by any means unusual to hear the remark that gouty individuals escape many diseases from which those who are not gouty suffer, and to a certain extent this is true; but the actual diseases of the gouty are, it must be confessed, sufficiently severe to divest the mind of any solace which might otherwise be obtained from this popular opinion. The immunity of gouty persons, as far as it is real, may be attributed to two chief causes, the first of which is the occasional imperative

necessity they are under to resort to medicines of a depurative kind; which experience has taught us are most suitable to relieve the blood and tissues of those morbid materials which occasion disease. The second is the temporary restriction in diet which they are compelled to observe so long as the paroxysm lasts. This forced abstinence favours the oxidation and decarbonation of noxious elements; which, if permitted to remain in the system, would eventually prove the source of various maladies.

It will have been seen from preceding observations that I regard the action of the kidneys, in the production of gout, as chiefly secondary to changes which have taken place elsewhere. But this action, when it is called into being, becomes one of high importance, and adds greatly to the danger of the patient, and to the probability that he will at no distant date sink under his malady. It signifies that another outlet of escape for morbid products has been either closed or narrowed; and the organs implicated are less easily relieved, and more speedily modified in structure than the liver. Not only is the defective action of the second great safety-valve of the body a source in itself of increased risk, but the kidneys are apt to become the seat of *quasi* independent maladies of a painful and dangerous nature. The arrest of lithates or oxalate of lime in their substance may occasion the formation of calculi, which may either remain in the kidney, or pass into and be impacted in the ureter, producing dilatation, inflammation or abscess; or they may descend into the bladder, and form the nucleus of concretions which render the life of the sufferer an almost insupportable burden, and from which surgery, if the great emunctories are seriously diseased, has but small chance of being able effectually to relieve him. Renal disease, however, is not in itself a cause of gout, but is one of its consequences, and a cause of its aggravation.

If we turn now to a consideration of the way in which the digestion becomes impaired, and in which the liver and the heart become embarrassed in their respective functions, we shall find that the first stone of the morbid edifice we are considering is generally laid by the habits

of life of the sufferer. Excess in any description of food, whether animal, albuminous, or vegetable, which the stomach is unable properly to digest, is the primary cause of the formation of gouty blood; that is to say, the blood resulting from imperfect digestion is of an impure kind.

The consequences that ensue from the formation and transmission of such a fluid throughout the body have been already noticed; and they will be more or less remarkable in different organs, accordingly as one or other of them is rendered weakly, either by the effect of inheritance, or by long-continued errors on the part of the owner. An undue use of stimulants, deficient exercise, and in fact everything that diminishes the nervous power of the system, by operating injuriously on the digestive function of the stomach, favours the production of gout; and, in those whose predecessors have been suffering from this complaint, the disease will show itself at an earlier period of life than in those who have been the authors of their own sufferings, the architects of their own maladies.

The solid parts of the body, the muscles, tendons, ligaments, etc., when nourished by the faulty blood which is the result of imperfect digestion, are all injuriously affected; and consequently those agents of locomotion, upon the due employment of which the healthy machinery of the body so much depends, become impaired in their activity, their tension and elasticity is diminished, and the exercise that formerly was attended with pleasure, is now invariably accompanied with more or less pain and discomfort. It requires a strong effort of the will for a patient predisposed to gout to maintain a sustained amount of exercise, as the chief muscle in the body, the heart, has participated with the others in the general loss of vigour and integrity; and, when exercise is resorted to, gives evidence of the impairment of its function by the rapidity with which it beats. It thus endeavours to compensate for the loss of its original power to propel the blood vigorously throughout the body.

The diaphragmatic muscle, so essential to perfect respiration, will at the same time become enfeebled, and hence more or less oppression of the breathing occurs, and the individual is rendered incapable of completely inflating his lungs, his breathing being performed by short rapid gasps, instead of by the broad and deep inspirations that were formerly possible. The discomfort then arising from exercise is the main cause why persons thus affected refuse to encounter it: and, instead of persevering to conquer their difficulty, they resign themselves to all the evil consequences that so commonly ensue from relinquishing the practice. A person of strong brain and will may have sufficient self-command to fight against the undermining influence of a growing love of ease; and he will, in time, re-establish a more healthy tone of system; but the great majority of patients will be prone to succumb to the morbid influences operating in the system, and to allow the consequences arising from them still further to detract from the comfort of the remaining period of life. It is not difficult to comprehend why this should be so, when we reflect upon what it is that the motive power and will of the brain depends. The brain, like other glandular structures (though differing from them in one essential particular, the function of secretion), depends for its integrity on a supply of healthy blood; and, in proportion to its original strength, it will be more or less affected by the character of the fluid that nourishes it and enables it to perform its duties.

If blood which contains the gouty elements in excess is the menstruum supplying the brain, unless this organ is sufficiently strong to withstand the noxious influence thus brought to bear upon it, we can readily understand how the will may become feeble, the mind vacillating, and existence itself a burden. Of all the remedies for the prevention and cure of gout, next to judicious abstinence, there is none equal to exercise, and yet, for the reasons above assigned, there is none to which patients are so unwilling to resort, or in which they are so unlikely to persevere. From the nature of their occupation the majority of men look upon exercise as

a waste of time. They condone their offence against nature's law by resorting to medicine as a counter-acting agent of their delinquency : and excuse themselves morally by assigning as a reason the extra attention they are able to give to their avocations when exercise has been abandoned.

Those who have for a long time relinquished the practice of active bodily exertion, will naturally feel a great disinclination to return to it. They are perhaps not conscious of the cause of their dislike; but the dislike itself is none the less on that account. When a man has been long in the habit of depending upon other locomotives than his own limbs for conveying him from place to place he has allowed his muscles to "lie fallow," so to speak ; and any unusual exertion of them occasions sensations of uneasiness and fatigue which operate as hindrances in the business to which he may have to attend, and render him unwilling to repeat the experiment, unless induced to do so by the occasional temptation of some favourite sport, such as shooting, fishing, or hunting. At a certain period of life moreover, there is usually an increase of bodily weight from the deposition of fat, while, at the same time, the muscles have rather diminished than increased in volume. They have still to bear the load of this additional incumbrance, and hence the individual is less than ever disposed to make efforts that are attended with constantly increasing fatigue. The habit of abandoning exercise becomes confirmed, and morbid results become consequent upon this infraction of Nature's law.

I am acquainted with two gentlemen who are both keen sportsmen, and who are both occasionally great sufferers from severe attacks of gout. Neither of them is ever attacked by the disease during the shooting season. They are both large preservers of game and follow their amusement with great ardour. When, however, the shooting season closes, they begin to experience the effects of a diminished amount of exercise. Their habits of life are very moderate, but they make no change in them, and, after a few weeks or months,

they become low spirited, bilious, and show all the symptoms indicative of an impure condition of blood, after which they are seized with a fit of gout. The fear of the malady is not a sufficiently strong inducement to make them take the amount of exercise necessary to keep them in health during the intervals between the shooting seasons.

Some years ago I knew a family of five brothers, whose parents had both died of gout. Four of these gentlemen died of the same disease, or of diseases connected with the gouty constitution. They indulged much in the pleasures of the table, and took but little exercise excepting in carriages. They were all remarkably fine men, yet none of them reached the age of seventy. The fifth, from circumstances, was compelled to put down his carriage when he was sixty years old, and being naturally a strong hearty man he took to walking, performing from six to eight miles every day. When he commenced this practice he weighed sixteen stone, but he soon reduced himself; and he pursued the pedestrian system until he reached his eighty-seventh year. At that age he caught a severe cold in consequence of his own indiscretion, and it ended in an attack of acute bronchitis, for which he would not send for a medical man until it was too late, and from which he consequently died. This was the only one of the five brothers who never had a fit of gout. He also differed from the others in the plain manner in which he had lived; choosing always to eat the simplest food, and never indulging in any of the refinements of cookery.

Sir William Temple, in his essay on gout, alludes to the value and importance of exercise as a remedy, not only to prevent gout, but to cure it. In referring to the case of the Rhyngrove who was killed before Maestricht, in the year 1676, he states:—"he used no other method or remedy than, upon the first fit he felt, to go out immediately and walk, whatever the weather was, and as long as he was able to stand, and pressing still most on the foot that threatened him; when he came home he went to a warm bed, and was rubbed very well, and chiefly on the part where the pain began."

Sir William Temple also records the case of "old Prince Maurice of Nassau, who laughed at the gout ; though he had been several times attacked, it never gave him care or trouble."

Dr. Gairdner mentions an instance of "an old gentleman now in his eighty-fifth year, who has much of the vivacity and cheerfulness of youth with painful gout in the foot. It is vain to recommend to him cure or remedies. His answer to his physician and his family is the same, 'I'll walk it off.' And truly he does walk it off. He often quaintly remarks to his friends, 'Go to bed with the gout and it will surely go to bed with you, and be mighty bad company.'"

The late Mr. Pennington was a frequent sufferer for many years previous to his death, at eighty-five, from severe attacks of gout. He never, however, relinquished his daily practice of walking in the thinnest of shoes, or when the weather was as inclement as it could be, when the gout was in his feet; when it attacked his knees he invariably resorted to the cupper, and lost a moderate amount of blood. He never laid up on account of the malady.

A gentleman living in Leicestershire, who inherits gout on both sides, occasionally suffers the most intense agony when it seizes the dense fascia at the back of his neck. He gives way to the disease when it attacks his extremities and nurses his gouty toe ; but when his neck is affected the agony is so great that he cannot remain still, and an instinctive feeling prompted him, on his first attack of the kind to rush out of his house and take a long and violent walk, putting on two great coats to induce copious perspiration. After a sharp walk of three miles from his house and back, he found he had obtained entire relief from the pain, and since then he has always resorted to the same remedy, and with a similar satisfactory result.

I could mention many other instances of the effects exercise in quickly overcoming gout when the patient has had sufficient determination to resort to the practice. It must be confessed that to do so requires the exercise of a strong will, and this endowment

is not very common among the sufferers from gout; especially when the disease has been occasioned by an indolent and indulgent mode of life. Enough, however, has been recorded to suggest to those who may be so unfortunate as to experience a first attack of the disease, the inquiry whether it would not be more to their *future* interests to relieve the system of their insidious enemy by the natural remedy of exercise, rather than to favour its recurrence by the use of remedies which, if not judiciously selected and employed, will almost invite a return of the malady.

So long as individuals continue to take the exercise to which they have been accustomed, whether it be walking or riding on horseback, they may with impunity indulge in the consumption of a liberal amount of food; but when exercise is diminished or abandoned, and their previous appetite remains, injurious consequences will most probably follow within a longer or shorter period. This is by no means an uncommon occurrence, nor is it difficult of explanation; for the stomach, having been accustomed to receive a large amount of food, has attained a capacity equal to its reception, and a feeling of vacuity or emptiness is felt unless the viscus is duly distended. Hence the inducement to take more food than is required; and the result is the imperfect oxidation and decarbonation of the excess of nutriment. Either the body becomes obese, or an unnatural vascular plethora occurs. In either case the production of gout is favoured, but it is a more frequent result in the latter than in the former class of cases; and when gout is not generated, as the result of the altered habits, other diseases will arise which may be distinctly traced to the ingestion of too large a quantity of nutriment.

History will supply us with numerous illustrations, in the biographies of eminent men, of the ill effects that accrue from the abandonment of physical and mental activity; and such instances will usually be furnished by the lives of those who were remarkable, in youth and early middle age, for their energy and activity, but who, when the necessity for exertion had

passed away, yielded themselves to the luxury and ease of an almost passive state of existence, and were either regardless, or more probably ignorant, of the consequences that would be entailed on them from such a change of habit. We shall also find examples of an opposite character, and of these, there is none more striking than that afforded by our late illustrious "Iron Duke," who continued from his prime, when his active labours ceased, to the end of his long life, to resist the seductions of the *dolcé far niente*, and who thus preserved both his physical and mental energy. It is well known that he would ride on horseback, when from the weakness of his limbs he was scarcely able to grasp the saddle.

One of his most celebrated generals, however, afforded a remarkable contrast to his illustrious chief. When the Peninsular war terminated he resigned himself to the enjoyments of life, as they are termed; and from being one of the bravest and most active of men, he became indolent and nervous, increased largely in bulk, and was a sufferer from gout. It is humiliating to our nature to confess the change that time and circumstances created in this brave soldier. He was a member of a fishing club, but resigned his membership at the end of a year. When asked his reason, he, with the true ingenuousness which was remarkable in his noble character, said, he was afraid of crossing a plank over a narrow ditch that led to the stream, lest he should fall in! Yet this gallant soldier was the first to assist in closing the gates at Hougomont. *Tempora mutantur, et nos mutamur in illis.*

The change from a naturally active to an unnaturally sedentary life, which is so apt to creep almost unconsciously over the man of middle age, is often preceded by a change of a more sudden and violent character. The devotion to "athletic sports," which has of late years been so marked a feature of aggregations of boys and young men, calls upon numbers of them to force the general muscular system and the heart into a development which is not only premature and excessive, but actually abnormal as compared with the total power

of the individual, and that then detracts seriously from the amount of nervous force that is available for other purposes. The vocations of life constantly bring the violent exertions of the young athletes to an abrupt termination; and the sudden change is in many instances not less fruitful of mischief than the previous excess. The "*mens sana in corpore sano*" can only be the result of a symmetrical training and employment of the physical and mental powers; guided by a complete recognition of the fact that the weak, although they may be strengthened, cannot be rendered able to bear the burdens of the strong. To subject them to too great a strain is to produce an inevitable breakdown, which is never more conspicuous than when the strain has been chiefly in some one direction. The truth of this observation is now being slowly recognised in relation to the system of competitive examinations, as it is found that many of the men who have entered the army under this *régime*, are deficient in the physical energy which is at the root of the power to command, and that they experience great difficulty in procuring the obedience of their soldiers.

The injury occasioned by gymnastic exercises is almost wholly due to the proneness of mankind to run into extremes. Such exercises, when restrained within proper limits, are not only harmless, but highly beneficial. The evils begin when the gymnast is induced by emulation to aim at results that are too high for him, or when he enters upon long-continued and violent efforts in rowing, or in walking or running, before the frame has attained the solidity by which alone such efforts can be sustained with impunity. It is often said that man arrives at his full growth and development at the age of twenty-one, although to say twenty-five would probably be nearer the truth. Whatever the time, it cannot be considered physiologically safe to overtax the machinery of the body *before* maturity has been attained. A horse is five years in arriving at maturity, and we all know that, if the strength of this animal is prematurely overtaxed, it is rendered almost worthless for the remainder of its life. It is also well

known that if the exercise of a horse is confined to the eight or ten miles a day, which is a fair amount to keep the animal in health, the duration of its efficiency may be prolonged to the age of twenty-five; but, on the other hand, if a horse is made to do double that distance, the duration of its life will be diminished by ten or more years. I have never seen it stated to what special cause this result is owing, the general remark being that the horse is *worn out*. He may be rendered permanently lame from over-work, or may be the subject of one or more of the numerous diseases that affect this useful animal, but whatever may be the apparent cause, the true one is always an overstrained heart.

No person doubts the fact that the habitual use of any muscle or muscles contributes to the increase of size of those organs, and it is sufficient to look at the arms of a blacksmith, or the calves of a pedestrian, in order to show how great may be the development in those portions of the body that are made to do extra labour. Nothing is more common than for an athlete or gymnast to call attention to the size of his muscles; and we have most of us met with repeated instances of the "young man rejoicing in his strength," either baring his arms to the shoulder for our inspection, or requesting us to feel through his clothes the huge bulk of his biceps or deltoid. He will say that within a given time he has increased so many inches round his chest, and that his powers of rowing, running, jumping, etc., are immensely increased. All this we may be ready to believe; and at the same time we may be quite content to be regarded with a feeling of commiseration, in some instances but ill-concealed, that we are so much inferior in our muscular development. But there is one most important organ that has been obeying the general law of increase of its muscular structure, by which, and only by which, the other muscles of the body could have attained their increase of volume, and that is the heart. The aspirant for honours in athletic sports never thinks of this, as most probably he has but a vague notion that he possesses such an organ at all, and is only conscious of the fact when, after severe exertion, he feels the "bumping"

inside his chest. Rest removes this sensation, but the important question remains, is this violent and sustained action of an unseen organ, attended with no prejudicial consequences? or, because no immediate result follows the violent exercise, are we to conclude that the structure of the heart remains uninjured? I unhesitatingly answer, No. It is from the increased size and development of the heart that the real dangers of undue muscular efforts arise. So long as the exercises are continued, the increase of the volume of the heart, which results from the greater demand upon it for the transmission of blood throughout the system, does not imply any derangement of structure; and so long as the muscular tissues of this organ are duly nourished, notwithstanding the increase of its muscular fibres, it performs its function with due integrity. There are, indeed, exceptions to this rule; and in persons who labour under any structural weakness of the lungs, it is not uncommon to find some pulmonary vessel giving way under the increased force with which the blood is propelled by the heart. The rupture may be confined to a small vessel, and the mouth may be "only filled with blood;" or it may occur in one of greater size, and may produce a copious hæmorrhage. I have known several persons who have experienced each of these conditions, and in whom impaired health was due entirely to this cause.

Simple rupture of a blood vessel, however, would not be sufficient to account for the broken health and premature old age which I have frequently seen in persons (some of whom indeed, had never sustained this accident, but) who have been the subjects of excessive physical exertion. There must, in such cases, be some continuing cause left in operation, in order to prevent the patient from rallying after a possibly trivial loss of blood. Such a cause is to be found in the altered condition in which the heart is left after the cessation of habitual violent exertion. When the stimulus to increased action is withdrawn from it, its muscular structure will become more or less flaccid and relaxed. It would be contrary to all that is known of the physio-

logical action of the growth and decay of muscle, if this were not so, although the degree and amount of change will vary in different individuals: in the man of lax fibre it will be greater, in one of originally firm fibre it will be less.

I admire, in common with others, the man who is capable of sustaining enormous exertion, and able to perform extraordinary feats of strength and agility, but I cannot look upon such a man, especially when associated with his juniors, as otherwise than a dangerous companion. The danger is, that others who are differently constituted may imitate and emulate his exertions, at a cost which, to them, may in after-life prove very dear.

It is not requisite to enter into a detailed statement of the effects resulting from diminished mechanical power of the heart. Every organ of the body will suffer from a defective blood supply, as long as the heart remains in an enfeebled state. In an extreme case, such as when an individual is compelled to abandon his athletic exercises suddenly, and to assume an almost sedentary mode of life, the change will probably soon manifest itself upon his constitution. In the case of one who is able to follow his own inclinations, it will be found that unless he not only takes exercise, but exercise in excess of what is required by the generality of men, he also will experience defective action of his heart, stomach, and nervous system.

The tendency of such derangements in the economy is to terminate either in gout or rheumatism, or in a combination of the two. If the individual inherits gout (a phrase which really means the inheritance of a weak stomach, in the same way that consumption is favoured by the possession of hereditarily weak lungs), it is more than probable he will suffer from gout; if, on the contrary, he has no such legacy, his disease will, most probably, be rheumatic-gout. He will be prone also, in subsequent years, to attacks of bronchitis, which may or may not be dependent upon the gouty or rheumatic condition of his blood.

In support of the views above expressed, I could cite numerous instances of persons whom I have known throughout life, and who have suffered from various diseases, from early excess of muscular exercise; in some it has directly contributed to shorten life; in others, life is dragged on with a very heavy chain. I will select from my note-book two or three cases in illustration.

A gentleman from his boyhood always had a languid circulation, and suffered from a constipated state of bowels. When a lad he was fat and chubby, with no great development of muscle. At the age of fifteen he took to gymnastic exercises, and persevered with them for some years. During that time he said he felt himself much better in health, he found that his bowels acted well, and it was rarely necessary for him to resort to medicine for their relief. One of his feats when in training, was to row round the Isle of Wight in a day, a performance he made light of. When about twenty years old he thought he would like to become a civil engineer, and for this purpose he went to one of the large establishments in the North of England, where he remained for three years; but during the whole of that time, he complained of never feeling well. He had left off his gymnastics; his bowels returned to their former constipated state, and he was never free from feelings of *malaise*. He became dissatisfied with the profession he had chosen, notwithstanding that he had displayed great aptitude in acquiring a knowledge of the science, and resolved to change it, and to enter the church. For this purpose he went to Oxford, and had resided there but a very short time when he died, after a brief illness, from typhoid fever. Before he went to Oxford I saw him, and found him languid and low-spirited. He had quite lost the cheerfulness of disposition that he had once possessed, and that was natural to him in his earlier life. No organic disease was to be discovered in his body, excepting that his heart was large and flabby.

Another gentleman who possessed a more tense muscular system than the last, but who was of a highly nervous temperament, became strongly impressed with

the value of gymnastic exercises, and during the practice of them described his health as being greatly benefited. In consequence of circumstances that demanded the full employment of his time, he was compelled to relinquish these exercises, and he soon fell into a state of great mental despondency. He suffered much from confined bowels, and had occasional paroxysms, such as in a female would have been called genuine hysteria. I have often seen him in this state, and have sat by his bedside whilst he was causelessly exhibiting the greatest grief, and crying like a child. He ultimately overcame these nervous seizures by the administration of tonics, etc., which doubtless were to some extent assisted by the originally considerable power of heart that he possessed. To this day, however, although now over sixty years of age, he is liable to be excessively excited about trivial matters.

There are other causes besides impaired action of the heart that tend to deterioration of health in those who have at a previous period of their lives pursued to excess either gymnastic or other descriptions of exercise, and the chief of these is, indulgence in the pleasures of the table, or the consumption of an amount of food, even if of a plain description, equal to what they were accustomed to take when in the constant habit of active exertion. Those who have been accustomed to much exercise are usually hearty eaters, and they rarely take into consideration that, when the habits of their lives have been changed, the wants of their bodies must be diminished. The same observation applies to the use of fermented drinks and spirituous liquor. Persons who disregard prudence in these matters may bring on gout without having any hereditary claim to it, and those who are descended from gouty parents may expect an earlier manifestation of the disease. The use of stimulants, however, involves questions so large and important that they require to be separately considered.

It is always difficult to determine the amount of alcoholic stimulant really required by any individual. We are often so habituated to the use of these agents that they appear to become a necessity, and to form as

much a portion of our nutriment as the bread and meat upon which we live. The stomach, as a rule, when it has been educated to receive a judicious amount of wine, does not rebel against the daily introduction of a moderate quantity, excepting when it becomes oppressed by improper or by too much food; and then, in gouty stomachs more especially, the wine is said to turn sour, and to produce heart-burn and discomfort. A person of temperate and prudent habits may thus preserve in the daily use of wine for years, and may continue to enjoy excellent health, even though he every now and then indulge in a larger quantity than his ordinary daily allowance. This practice, however, is a seductive one, and requires watchfulness in limiting the number of such experiments, for no descent is easier than the steps that lead from moderation to excess. As men advance in life they often find, or think they find, that wine is increasingly grateful to them, and that it benefits their constitution; and they avail themselves of the saying, which is true enough in some isolated cases, that it is "the milk of old age." But experience proves that such milk often turns sour, and instead of sustaining the vital organs, proves a source of discomfort or disease.

Many persons will dispute the assertion that wine is injurious to them, and will say that they never feel ill effects from taking it, even in large quantities; their idea of an ill effect being confined to its affecting their heads, which they declare it does not do. It would be better for some who drink largely, if wine had the power of producing the influence on the brain that usually follows excess in drinking; as this result might possibly convince them that the practice would ultimately prove injurious to them. Persons of this class, in whom gout is not an hereditary disease, often become the victims of it, and entail upon themselves and their posterity all the miseries consequent upon the malady. If excessive indulgences in stimulants and the pleasures of the table do not produce a positive gouty paroxysm, they are not the less sure to occasion kindred maladies of an equally serious nature; for no man can persistently

adopt a course of treatment of himself after this fashion, without laying the foundation of some disease that will probably lead to the premature decay of his mental and physical faculties. Few such men, if they had the power to see into futurity, and to forecast the careers of the children they have been the means of bringing into the world, would fail to shudder at the miseries they had entailed on themselves and their posterity.

It may be assumed, from the almost universal custom of having recourse to stimulants of one kind or another, that such stimulants are more or less a necessity of mankind; and it is found that those who indulge in them cannot or will not willingly relinquish the practice. Whatever be the stimulant that is taken, provided it be taken in moderation, the consumer will not injure himself. Herein, however, lies the difficulty. A man may have undergone an unusual amount of mental or bodily fatigue, after which he feels languor and listlessness, his circulation is slow and enfeebled, and his work has told both upon his heart and brain. He then has recourse to some stimulating beverage, and, if he has not previously over-indulged, it operates upon him like magic; his heart obeys the impulse communicated to it through the nervous system, his brain receives a larger supply of blood, and the sensations of languor and listlessness speedily vanish. This is the usual effect of stimulating beverages, and they deservedly rank high as most valuable medicines, perhaps the only light in which they should philosophically and scientifically be regarded. But what is our ordinary custom? We admit the value of stimulants in an example like the above, and yet we daily indulge in the same description of medication. We have taught our stomachs to depend upon the aid of a stimulant to assist it in its daily task of digestion, and our hearts are aided to carry on the circulation of the blood by the same instrumentality. But it may be asked, and it is a question which those who have prudent regard for the future should always ask themselves, is it wise to have daily recourse to stimulants when no urgent demand exists for them?

We know that habit supersedes nature; but the latter should not the less be attended to.

There is no doubt that neglect to put this simple question is one of the most fertile sources of the gouty diathesis; for we know that in those nations where temperance prevails, gout does not reign.

When once a man has become habituated to stimulants and relies upon the effect that they produce, he will usually say that he cannot do without them: and many will declare that they would rather run the risk of a succession of gouty attacks than abandon the practice. They argue, and very naturally, from the sensations of temporary relief that they experience; but the enquiry naturally suggests itself, Have they ever tried to do without stimulants? Many cases are recorded of martyrs to gout who have tried the experiment without success, as the gout has invaded them notwithstanding their abstinence. Such men have generally been large consumers of wine, but their cases do not become instructive unless we are informed what treatment was adopted to compensate them for the loss they had sustained, and also what was the amount of injury that their hearts had suffered for a long continuance of gouty disease. Neither can we tell from the record of such cases how much or how little the medicines resorted to for the cure of their malady may have been instrumental in weakening the heart's structure. No medical man who entertained a suspicion that his patient's heart was affected, either by disease or loss of power, would feel justified in debarring him from taking a proper amount of stimulant. The failure of a beneficial result from abstinence has doubtless often arisen from neglect in selecting suitable cases for the experiment; and men are only too ready to refer to the instances of such failure, and to use them as arguments for declining to repeat the trial.

The following case may prove instructive as to the lengths to which we may proceed in advising a change of habit in a person who has for a long period been a sufferer from gout, in whom there exists no organic disease, and whose repeated attacks of the malady have been dissipated without the aid of colchicum.

I attended Colonel B——— for the first time when he was seventy years old. He was suffering from an acute attack of gout, to which he had been subject from the age of forty. In later years it was rare for him to escape a seizure for more than two months at a time, and he was constantly on crutches. This gentleman had indulged during the whole of his life in the pleasures of the table; he was celebrated as being the Amphitryon of London dinner-givers. He had never stinted himself in wine excepting when suffering from his malady. He was a stout man, with a strong full pulse, and his heart was perfectly sound. The strength of his pulse continued throughout his attack, as no medicines were administered that would have the effect of lowering the power of his heart. I was much struck with this strength of pulse throughout the whole of the colonel's illness, and I felt satisfied that he would be benefited by relinquishing wine and other stimulants altogether; and that by doing so he would, if he did not shake off his gouty paroxysms entirely, at least prolong the intervals between them.

On his recovery I proposed that he should do so, and he cheerfully assented, remarking, "I would give up anything to be freed from my enemy." The colonel went from the age of seventy to eighty without experiencing another attack of gout. Between eighty and eighty-two he had two mild attacks, each of which lasted only for a few days. The first was in his right foot, and the second in his left hand. From this period up to ninety he remained entirely free. He then resumed the habit of taking "sips" of wine and other stimulants, and by degrees took these more freely, at the same time eating of most dishes that were presented to him. When in his ninety-first year, his appetite suddenly failed him, after a day's extra fatigue, and he never rallied from the consequent exhaustion. He died in the most perfect calmness, and in full possession of his mental faculties. Towards the close of his life he seemed to act as if "death had forgotten him," and to think that he was free to take any liberties with his stomach that his appetite suggested. He had been

otherwise careful in attending to the maintenance of his health, and the correction of the errors proceeding from his indulgence in eating, until the final breaking up occurred. When he first gave up taking wine, he required some beverage as a substitute, and he generally drank a considerable amount of liquid at his meals. I recommended lemonade, made with lemon juice, sugar, and hot water. This drink he took for years, and never missed or felt the want of a stimulant.

Somewhat kindred to the questions connected with alcoholic drinks, are those that have reference to the use of tobacco; and from observations extending over many years, I have been irresistibly led to the conclusion that the practice of immoderate smoking, especially prior to the perfect maturity of the body, tends to enfeeble the constitution, to impair the muscular power of the heart, to lower the force of the circulation, and to occasion a more or less relaxed condition of the muscular fibre throughout the body; effects which are more especially to be discerned in those individuals who may be described as being originally of a "relaxed habit." Such consequences will not surprise us when we look dispassionately at the effect produced by the use of so powerful an agent as tobacco; for all who have luxuriated in the pleasing practice of smoking will admit the soothing and calming influence occasioned by it, and that such an influence can proceed from no other source than the sedative property pertaining to this nicotian herb.

It is with no desire to follow in the track of those who have written in terms of strong objurgation on the evils of smoking that I agree with them up to a certain point in condemning the habit; for smoking, like every other custom incidental to an advanced period of civilization, may be indulged in by the majority of persons, provided they are the masters and not the slaves of the practice. If the same amount of discretion is exercised that, thoughtful individuals employ in the judicious and proper use of stimulants of the stronger kind, then smoking may be regarded in its proper light as a means to overcome the excitement of an over-taxed brain or

body, and to furnish a stay to the exhaustion consequent upon excessive work of the mental or physical faculties. My chief object in alluding to the subject is to condemn in the strongest terms the practice of smoking by youths who have not arrived at maturity of growth, and to point out the results that flow from it.

It is a well-known physiological fact that the circulation is more rapid during the period of growth than when the body is fully formed. This has not escaped the attention of poets, who have enlarged upon "the blood running riot in youthful veins." It is by the greater impulse given by the heart to the transmission of blood through the vessels and tissues of the body that nature builds up the continuously increasing fabric of the human frame. The appetite of a healthy youth is proverbial; his consumption of food appears out of all proportion to what he will eat in after-years. And why is this? It is simply for the purpose of supplying the heart with that larger amount of blood which at this particular period of growth is required to make a perfect structure. What then will take place if we adopt any course that lessens the power of the heart, or diminishes the healthful rapidity of the circulation during the most important period of the growth and development of the body? We have daily before our eyes what takes place amongst the lower orders of society, who are badly fed, clothed, and housed; living as many of them do, from "hand to mouth," in an impure atmosphere. In them the power of the heart is at its minimum, their circulation is consequently feeble, they are stunted in their growth, and but too often present the appearance in their feature of an age which they are far from having reached, and which they probably may never reach at all. Disease makes sad havoc amongst this unfortunate class. They have no power within to withstand its ravages; and their internal organic structures are prone to congestion from the feebleness of the heart's action and from the imperfect distribution of the blood through them. If this be a true picture of what happens to those individuals,

can we feel astonished that so many youths who are more advantageously placed in life should present many of the constitutional characteristics belonging to those who are so far below them, when we consider that the former have lowered their vital powers, the action of the heart especially, by the practice of smoking?

I have seen numerous cases of youths whose ages have been from twelve to twenty, who have suffered from extreme debility entirely owing to this habit. Some have suffered from palpitation of the heart, with neuralgic pains in this organ, and in the muscles of the chest, causing the greatest alarm to their relations; others from giddiness, loss of appetite, cough, and various dyspeptic symptoms. Such youths have become stunted in their growth, narrow-chested, and with narrow shoulders, all showing an arrest of the natural development of the bodies. Some have so injured their mental faculties that their memories have become impaired, so that they could learn nothing without the strongest effort; and when anything was learned, they were incapable of retaining it. Nor will it surprise us that defects like these, unless they are early repaired, should lay the foundation for future disease in the most important vital organs, and prove the source of gout, rheumatism, and the long list of maladies which originate in defective circulation and assimilation.

An instance of that rare occurrence, the formation of arcus senilis in a very young person, who was also a great smoker, recently came under my observation.

I had been attending a young gentleman, aged twenty, for a severe bilious attack. On placing him opposite the light to examine his tongue, I observed at the lower margin of each cornea a white semi-circular line, presenting the ordinary aspect of the senile fatty arc. On asking him if he had ever suffered from palpitation of the heart, he assured me that he had not; nor had he experienced any difficulty in breathing. On mentioning this to his mother, she at once contradicted her son's evidence by saying, "It is hardly a month ago that he was romping with his youngest sister, and running

round the dining-room table with her, when he was suddenly seized with such a violent palpitation of his heart, that it was all we could do to keep him from fainting." Now, the labours of Mr. Canton have taught us to regard the senile arc as a visible instance of fatty degeneration of tissue, and as an index that a similar change is probably occurring also in organs that are concealed from view. Its appearance in advanced life is but a part of natural decay; but at middle age, and *a fortiori* in youth, it shows the approach of a subtle and insidious enemy, by which the heart is especially prone to be attacked. A brother of the patient referred to, a year older than he, was also much addicted to smoking; but was compelled to give it up on account of the effect it had upon his heart. It occasioned much pain, with palpitation and oppression of the breathing; symptoms which disappeared when the practice of smoking was discontinued.

I have recently attended a young gentleman aged eighteen, in a severe attack of scarlet fever. He has been in the habit of smoking for some years. He presents the outward aspect of a strong youth, but his tongue shows, only too plainly, that the strength of his system does not reside in his internal organization. It is spongy, soft in texture, and in fact a smoker's tongue. Within the first twelve hours of his giving evidence of the scarlatinal poison having entered his system he passed a considerable quantity of blood in his urine—a rare occurrence in so young a person at the commencement of this fever, although not infrequent at the later periods of the disease. He passed safely through his fever by the aid of quinine, steel, port wine, etc., but its progress was attended with some anxiety.

This young gentleman is descended from a gouty race, but whether he has rendered himself a more ready recipient of the disease by his early habit of smoking, time alone will show.

There are some smokers, as there are some drinkers, who, at least for a time, do not seem to be prejudicially affected by their excessive indulgence in these practices,

but it is rare to find either one or the other of them free from disease, and this disease is mostly in the heart.

An old friend of mine, whom I ventured to warn many years ago as to the danger he incurred by smoking to excess, and who treated my advice with a witty good-humoured rejoinder, and would not tolerate the idea that anything could seriously affect his heart, continued his practice all through his life. At the commencement of this year he had an attack of bronchitis, from which any ordinarily healthy man would have recovered. He was impatient of restraint, and would not keep in bed; and on the fourth day of his disease, in walking from his bedroom into the one adjoining, he staggered to an arm-chair, and died in a minute or two, at the age of sixty-four. He had been subject to occasional attacks of gout, and had given evidence of an atheromatous deposit of a gouty character on the valves of his heart. Another gentleman who was equally fond of smoking, and who possessed a flabby muscular fibre, brought on angina pectoris by his indulgence in the practice, and died suddenly from this disease at the early age of forty.

An instance of the diminished muscular power produced by smoking, even when never carried to an immoderate extent, occurred some few years ago in the person of one of the healthiest and most athletic of our Scottish nobles. He was passionately fond of deer-stalking; but to his surprise, although still young, he found that the fatigue consequent on following this sport was so great that it caused him to think of abandoning it. It occurred to him, however, that his incapacity to bear fatigue might possibly be owing to the habit of smoking, which he had then practised for a year, and he determined to try whether or not he was right. His judgment proved correct, for upon relinquishing the practice he discovered that he was once more competent to bear any amount of exertion in the pursuit of game. There can be no question that the continuous sedative influence of the tobacco upon the heart and circulation of this nobleman had rendered that organ, as well as the rest of his muscular tissues, less

tense and less capable of sustaining the violent strain put upon them than they were before he took to smoking; the proof being that, on relinquishing the habit, he at once regained his ordinary muscular powers.

The effect of smoking, moreover, is not always confined to the individual who practices it; and may, in some cases, be transmitted to offspring. I was on terms of intimate friendship with a gentleman who served with the army in Spain under the late Duke of Wellington. In that country this gentleman learned to smoke cigars, which before that period were a novelty in England. On his return, he became engaged to be married. His intended wife persuaded him to give up smoking, which he did for a year, and at the end of that time the marriage took place. Ten months after his marriage, his wife was confined of a daughter, who, from the hour of her birth, and up to this time, has always been remarkably healthy. From that period the husband resumed his habit of smoking cigars, which he did always at night, accompanying the practice with two glasses and sometimes more, of hot spirits and water. His wife presented him with a numerous family, but *not one* of the subsequent children was either strong or healthy, although the mother was remarkably so herself. The children were all puny and ill-nourished. Several of them died in infancy: two of them suddenly of laryngismus stridulus—crowing inspiration, and the four that grew up to adult life, all had, excepting the first daughter, a singularly aged aspect. Both father and mother, when they were married, were handsome and healthy looking. The father lived until he was 60 years old, and died of some cerebral affection.

Last among the causes of gout, it is necessary to mention one that has always been recognised and that like smoking, owes its power to its depressing influence upon the nervous system generally: namely excess in sexual indulgence. In this, as in other matters, there is none but an individual measure for excess, and what is harmless to one may be highly injurious to another.

But there can be no doubt that many of the conspicuously gouty have added this to other indulgences to which they have surrendered themselves; and that, in cases of predisposition to disease, the second marriages of elderly men, or the marriages of old bachelors, have often served as causes by which that predisposition was called into play. A gouty man is like a besieged fortress; and, with an enemy continually at the gates, he can never afford to slacken the vigilance or to diminish the force of the nervous energy which is his garrison.

CHAPTER V.

GOUTY INFLAMMATION.

IN order that we may understand the nature of gout, the way in which it should be treated, and the means by which its occurrence may be prevented, it is requisite to take into particular consideration the most prominent symptom of the acute form of the malady,—namely, inflammation ; and that of a peculiar or special kind, with no tendency to the suppurative process. Without well grounded views of the nature of this condition in its various phases, and in different types of constitution, as well as of the causes that produce it, we shall be at a loss to comprehend many of the protean forms which gout assumes, and many of the symptoms which attend upon it.

The derivation of the word inflammation, expresses clearly the apparent nature of the affection, and shows that it was so called in consequence of the acute or burning pain felt in the part affected by it.

It was formerly believed that an irritation in any part of the body is occasioned by some stimulus owing to which the blood flows into the capillary vessels in greater abundance than natural, and these vessels become over-distended and enfeebled; whence result pain, redness, heat, tension, and swelling; symptoms which appear in greater or less severity, according to the structure, vital properties, and functions of the part affected, and its connection with other parts, as well as according to the constitution of the individual.

Subsequently, altered vascular action, and altered nervous action have been considered as the sources from whence inflammation springs.

Dr. Bence Jones, in his admirable Lectures upon Pathology and Therapeutics, Churchill, 1867, takes a view of the origin of inflammation very different from that of his predecessors. He considers that "inflammation, in its first origin, usually is an exaggeration or excess of the ordinary oxidizing action that occurs in each part of the body, and that this increased chemical action sets up mechanical derangements which react on the chemical repair of the textures in which the inflammation is set up."

He contends that "the law of the conservation of energy must be applied to the heat produced in inflammation, as it is applied to any other question regarding heat. We have ceased to look for the cause of the ordinary heat of the body in vital or nervous action. We look further, and see it coming from part of the amount of force set free by the action of oxygen in the body, a definite amount of the total chemical force, giving definite amount of heat. In inflammation we must look to the same source for the heat. It is no solution to say that the heat comes from increased vital, nervous, or vascular action, and that these arise from the effect of some stimulus. If it be not fresh created, the increased heat must ultimately come from the force that exists in oxygen, hydrogen, and carbon; and it is more reasonable to refer the heat of inflammation directly to the same source as the ordinary heat of the body, thereby making the healthy and inflammatory heat proceed from the same kind, although from different amounts of the same chemical action, than to attribute the ordinary heat to chemical action, whilst the extraordinary heat is supposed to be derived from some other and far less determined source, which itself must ultimately be traced to its origin in the slow combustion that never stops within."

Dr. Bence Jones illustrates his position by referring to the fact that inflammation can be set up in the cornea or cartilage, where neither blood nor nerves exist, by increased friction, or heat, or light, or electricity, or by chemical irritants, as cantharides, turpentine, and other oils or by irritating acids or strong alkalies as sufficient

to prove that inflammation does not absolutely depend on nervous or vascular action, but that it may be caused by increased molecular motion. "Heat and light and electricity and chemical action are forms of molecular motion which, when added to the motion already existing in the cornea or cartilage, give rise to increased oxidation of the non-nitrogenous and nitrogenous substance even in the bloodless textures, and this altered oxidation immediately determines an altered chemical circulation of lymph and an altered nutrition in the inflamed part."

"The increased molecular motion in the cells of the cartilage, produces increased chemical circulation of lymph, increased consumption of oxygen, increased liberation of heat, and of oxidized products, and ultimately of water and carbonic acid. This action spreads from cell to cell until it reaches the capillaries."

A capillary in ordinary action contains blood-globules loaded with oxygen in its centre, with liquor sanguinis moistening the tube around. Oxygen diffuses from it with the lymph into the cells and structures, and thereby active oxidation is kept up outside the capillaries in and around the different parts of the different textures. The peroxidation which constitutes the first step of inflammation, begins outside the capillaries, where the animal heat is produced."

"When the increased action reaches the capillaries the oxygen bearers are by the demand for oxygen, attracted in excess; they displace the liquor sanguinis,—at first producing a more rapid flow through the part, and quickly rushing in, so as to cause a heaping up of the blood-globules, giving rise, first to enlargement of the vessels, and then to obstruction, which immediately reacts on the heart, increasing the pressure and rate of the blood in all the arteries, among others in those around the obstructed part, so that stronger motion of the blood occurs around the obstruction, and thus a larger area of increased chemical action tends continually to be produced."

"That the first mechanical congestion can be caused by increased chemical actions, and not by any nervous

action affecting the heart or capillaries is proved by the fact that when the circulation is arrested by a ligature in the frog, and then irritating substances are applied below the ligature, the blood is seen to be attracted to the irritated capillaries, which will remain congested after the circulation is re-established by removing the ligature."

"In the obstructed part the mechanical results of over-fulness and pressure show themselves. The pressure causes pain, and the increased supply of blood makes the nerves around the obstruction more sensitive than when less blood is there."

"The tension causes the serum to be effused, and even fibrin, altered by the peroxidizing action going on, also exudes when the pressure is increased; and this fibrinous exudation causes intestinal thickening, and constitutes a much more permanent obstruction than the liquid matter, which can rapidly be re-absorbed."

"When the primary increase of chemical action is excessive the whole blood participates in it. Peroxidation not only causes an excess of fibrin, but it produces a higher state of oxidation of the fibrin than exists in health. The membrane of the blood-globules also probably is altered in composition, and becomes more adhesive, so that the blood-globules aggregate together and fall more quickly when the blood is drawn from the body, whilst the altered fibrin contracts more firmly than ordinary fibrin usually does."

There can be only one opinion with regard to the skill and ingenuity with which Dr. Bence Jones has worked out the very difficult problem of the cause of inflammation; and it appears to me that almost the only defect in his deduction is his exclusion of the influence exercised by the nervous system in promoting or maintaining the result. I think he might have more distinctly admitted the power exercised by the nerves in sustaining inflammatory action when once it has been originated, even though he denies that irritation or derangement of nerve is a primary cause of inflammatory action.

Looking at the question of the cause of inflammation from a practical point of view, and guided by what we see at the bed side, I think we require something more than Dr. Bence Jones's chemico-mechanical theory in order thoroughly to explain the inception and progress of this morbid condition.

We know that an attack of inflammation must be preceded by congestion in the part or organ of the body which becomes inflamed. We also know that parts and organs of the body may suffer from congestion without inflammation being produced, and that such congestion may be either active or passive in its character. How can we explain the different results in the two cases, without calling to our aid the influence of some additional facts, such as would be furnished by the operation of the nervous system?

It will not in the least invalidate Dr. Bence Jones's theory in its ultimate relations to say, that in the case of a passive congestion we are compelled to resort to a motor-power to stimulate the heart to extra exertion, and to enable it to carry on the circulation with more vigour, so as to overcome the stasis of blood that has occurred. Oxidation alone fails to remove this stasis, until increased nervous power has been generated by the influence of some stimulus. It almost follows that one of the most important desiderata in medical education is the attainment of knowledge when to employ stimulants and when to withhold them; and in no instance is this more discernible than in the treatment of the two forms of congestion to which I have referred.

We find that the blood of an individual suffering from active congestion is rich in fibrin and in red corpuscles, the heart beats vigorously, and the nervous sensibility is at its maximum. To combat this description of congestion, which would speedily lead on to inflammation, we must modify, as speedily as possible, the quality of the blood, by diminishing the excess of the two elements mentioned. When this change is accomplished, the action of the heart will be moderated, and the diminution of pain will soon give evidence of the lessening of nervous sensibility.

In the case of a person who is a sufferer from passive congestion, we shall find a different, almost an opposite, condition of things. The blood will be deficient in fibrin and in red globules, the heart will beat less vehemently, and the nervous sensibility will be at a minimum. The indications of treatment may be said to be directly opposite. Additional vigour of heart, an increase in the richness of the blood, and a corresponding heightening of the nervous sensibility will overcome this form of congestion; which, if otherwise treated, would probably end either in death, or in prolonged illness, attended with changes of structure in the part immediately affected.

In proportion to the degree in which the nerves can be stimulated and sustained by the employment of remedies that act specially upon their centres, will be the degree of our success in overcoming a passive form of congestion. The more we can improve the character of the blood, the greater will be the generation of nervous force, and the more complete will be the oxidation of any injurious elements contained either in the blood itself, or in the tissues which are the seat of disease.

The absence of inflammation in a gouty person is more to be feared, as far as the ultimate results are concerned, than the most decided manifestation of swelling, redness, heat, and pain; and the degree in which these symptoms decline in severity in successive attacks affords an indication by which we may judge of the failing powers of the patient, more especially if he has had to recourse to colchicum for the alleviation of his sufferings. So long as an attack of gout is attended with a decided and marked redness of the part affected, we need entertain little apprehension of immediate injurious consequences; but when the constitution has been undermined by repeated attacks of the malady, one fit following another after only short intermissions, we cannot do otherwise than regard with apprehension the effect of such an invasion of disease upon the strength and stamina of the individual. The more active the remedies that have been employed to subdue the

paroxysms, the greater is the probability of a speedy return of the malady; for such remedies often occasion more danger to the system than would the gout itself, if left entirely to nature for its cure: producing, in fact, a far worse disorder than that which they remove.

Without disputing the general soundness of Dr. Bence Jones's views as regards the actual chemistry of the inflammatory process, I yet think that they fail adequately to take into account the influences by which vital chemistry, either natural or morbid, may be modified or controlled, and that their adoption, by persons of less profound learning than himself, would lead to grave errors, and would cause practitioners to overlook many circumstances which have an important clinical bearing. If mankind were simply machines, devoid of nerves, and constructed on an uniform model, it would be less difficult to accept a simply chemical or mechanical theory of disease; but, as this is not the case we may safely assert that no such theory can fully explain all the morbid states and symptoms that are met with in the ever-varying human constitution. It is necessary to bear in mind that our knowledge of animal chemistry is not yet sufficiently complete to afford materials for a perfect theory, and that the affinities with which we are actually acquainted appear to be hindered or promoted in their action by many conditions, at the nature of which we can do no more than guess.

An argument in favour of Dr. Bence Jones's views may certainly be founded upon the fact that the activity of the gouty inflammation, and the acuteness of the associated pain, bear a distinct proportion to the richness of the blood in fibrin and red corpuscles. We must, however, remember that the sensibility of the nerves is materially influenced by the condition of the blood: that the poorer it is, the less sensitive will they be; and that an insufficient amount of blood will in extreme cases occasion temporary blindness, deafness, etc., etc., the sensibility of the nerves being for the time entirely extinguished. On the other hand, the richer the blood, the more severe will be the pain which is produced by

the pressure of inflammatory action. In a pathological point of view, it is very important to associate the production of inflammation with deranged nervous action, and it is very difficult to imagine how any form of disease could arise without more or less implication of the integrity of the nervous function. It strikes me, as bearing upon the point under discussion, that I have never known a paralysed limb to be attacked by gout, even when the paralysed person was a sufferer from the malady. Such an exception cannot be due to the state of the blood, and must evidently be referred to a difference in innervation.

A comparison between the constituents of healthy and unhealthy blood,—or blood possessing what is termed an “inflammatory” condition, which on being drawn and allowed to cool is always either cupped or buffy,—may show us how adequate are the changes in composition to disturb the transmission of the fluid, and to produce the symptoms indicative of inflammation.

The following, according to Dr. Benjamin W. Richardson, may be considered a fair average composition for one thousand parts of healthy blood:—

Fibrin	3
Corpuscle matter	135
Fat and salts.	12
Albumen	70
Water	780

1000

In inflammatory blood the amount of fibrin is found to be increased; and instead of being only three parts in the thousand, will sometimes rise to as much as ten. In fevers unaccompanied with inflammation, the proportion of fibrin is natural, or may even be below the average; but wherever inflammation supervenes, it is immediately increased.

Gout, at it presents itself in individuals of opposite constitutions, is an illustration how much the type of disease depends, so far as pain is concerned, upon the description of blood severally possessed by them. In one in whom the blood abounds in red corpuscles and

fibrin the pain will be excessive, and the subsequent œdema, when the inflammation ceases, will be comparatively trifling. In another, the pain of gout, will be much less severe, and the œdema from the first will be greatly in excess. In such a case the blood is deficient in the fibrinous and corpuscular elements, and contains more of the serum or watery portion. This form of gout has been termed "dumb gout," from the absence of pain; and, if blood should be drawn from the patient, it will be found that the coagulum is small in amount, and that the evidence of inflammation afforded by the appearance of the buffy coat is much fainter. The blood will be slow to coagulate, and the clots, when formed, will possess little cohesion.

Notwithstanding the opposite character of these conditions, the former patient may be reduced to the state of the latter by the injudicious employment of remedies for the immediate relief of temporary pain and suffering. The tendency of the blood of the gouty to undergo progressive deterioration, the degree in which this change may be promoted by treatment that is palliative without being curative, and the effect that it has in modifying the type of the disease, and in hastening a fatal termination, are truths that should never be forgotten by either the patient or the practitioner.

CHAPTER VI.

TREATMENT.

THE best possible evidence of skill and tact on the part of a medical practitioner is afforded by the comparative immunity of his habitual patients from severe and dangerous illnesses. Such an immunity shows that he is able to perceive and to meet the earliest signs of impending mischief, and that he has known how to make the value of his warnings felt, and the importance of his directions appreciated. Men of this class go through the world in very noiseless fashion, and their unobtrusiveness of character often turns them away from the paths that lead either to great pecuniary reward or to great professional renown. They are none the less benefactors of mankind, and the preservers of the prosperity and the happiness of innumerable families. For, in the fevered race of modern civilization, men rush blindfold in the pursuit of pleasure or of gain, and are far more indebted for their security to those who will gently turn them aside from the pitfalls in their way, than to those who, with whatever skill and care, do but raise them after they have fallen. And so, in any real or philosophical sense, the prevention of disease should take precedence of its cure, and should claim the first attention of a writer. The actual order of events, however, militates against such an arrangement; for it is usually the demand for cure that opens to us, when it has been fulfilled, the opportunity for subsequent prevention. To many sufferers, the occurrence of a first paroxysm of gout appears to be the commencement of the malady; and the way in which

this paroxysm is dealt with will determine the course of their future conduct. In the first place, therefore, I shall consider the indications and modes of treatment with reference to an acute attack of the disease.

Dr. Bence Jones, to whose writings reference has already been made, lays it down that "in the present state of our knowledge the treatment of gout must be divided into two parts: first, the specific, and second, the expectant treatment. He acknowledges that each of these has its own advantages and disadvantages; and is of opinion that, by the right use of both, the greatest good with the least harm may be attained. The admission that there are disadvantages in either method is an acknowledgment of some imperfection in it, and seems to imply that a rational and safe treatment for gout is still a desideratum.

Dr. Bence Jones observes that the object of specific treatment, of which the administration of colchicum may be taken as the type, is to get rid of the attack as soon as possible; that is, to put an end to the pain at once; to stop the fibrinous and crystalline thickening of the joints, and to allow the patient to return to his usual mode of life in the shortest possible time. He forcibly describes some of the objections which attend upon this plan; and says, first, that the specific acts more violently than is intended; and secondly, that cutting short an attack leads more quickly to a return of the disease, because the usual mode of life is that which has caused, and therefore will again cause gout; and thirdly, that the urate of soda, existing in excess in the blood serum and diffusing into all the textures, where it is oxidized, if stopped in its active oxidation in any part, is more liable to set up a similar process in the fibrous textures of some internal organ, as the stomach, the brain, or the heart.

The expectant treatment aims to keep the gout fixed in the extremities until the textures and blood are as much as possible freed from the urates by oxidation, and to effect a change for the better in the mode of life, at least during illness; so, that, from both these causes, a long period may occur before the patient is again

attacked. Dr. Bence Jones mentions, as the disadvantages attendant on this method, first, that the patient may get very feeble from the long-continued inflammation and confinement, and that hence other ailments may arise; secondly, that the joints, in consequence of the duration of the inflammation, may become much more thickened by fibrin and urates than they otherwise might be; and that thus the general health may give way from the loss of power to take exercise.

I am far from agreeing with Dr. Bence Jones in all the positions which he assumes. His observations upon the evils of the so-called specific treatment omit all mention of what is, in my judgment, the most important of them,—the influence of colchicum and of analogous substances in diminishing the quantity of fibrin and red corpuscles in the blood; and, when specifics are laid aside, I think the resources of medicine are amply sufficient to furnish us with a treatment which may properly be called rational rather than expectant. The latter term implies trusting to nature for the removal of disease, whereas, in truth, all that is known in our art should be rendered subservient to its cure, and to the speedy extinction of its causes.

If we were ignorant of what produces gout, and of the condition of the system in which it prevails, we might be justified in waiting for the *vis medicatrix naturæ*; but, on the contrary, as we know the source from whence the disease springs, our best efforts should be directed to remove the *materies morbi* from the system. I entertain no doubt that, in the majority of cases, this may be done without the aid of specifics; more especially in primary instances of gout, occurring in individuals who have never taken colchicum.

If we look at the matter by the broad light of clinical experience, alike disregarding the partial view of the speculator in one department of science, and of the practitioner who takes under his patronage a single bodily organ, we shall be forced to recognise in a gouty paroxysm the presence of two cardinal conditions; impurity of blood, and local and general plethora; and of one prominent symptom: acute or even excruciating

pain. We are in possession of certain well-ascertained data connected with the gouty diathesis, and although the symptoms vary in their intensity in a marked manner in different constitutions, and in the same individual at different times, yet we know that before we can render any real service to a person suffering from gout, we must first of all remove from the blood the excess of morbid products which is at the root of the disease. In proportion as we can accomplish this object, and can eliminate the gouty material—the urea and urate of soda—without impairing the strength of the patient, so shall we be successful, first, in assuaging pain, and secondly, in restoring the patient to a better state of health than that which preceded the attack. If, however, in the first instance, we direct our efforts to the pain, by administering a specific like colchicum, without previously attempting to remove or lessen the cause from which the pain springs, we shall neither act justly to the patient nor wisely by ourselves. We know, as a rule, that nothing is easier than relieve the pain of gout by the administration of colchicum, and we should bear in mind that, severe as this pain may be, it is one of nature's indices to point out to us that a culmination has taken place in the system to produce it. Before restoring to specific treatment for its relief, we should endeavour to lessen the plethora existing in the capillary vessels which are unduly distended, and which, by their mechanical pressure on the subjacent nerves, are the immediate causes of the suffering. The duration and severity of the inflammatory symptoms, in a joint affected with gout, will greatly depend upon the condition of the patient's blood; if this be rich in fibrin and red corpuscles, the pain, heat, and redness will be severe; but if, on the contrary, the blood has become deteriorated by the occurrence of frequent attacks of gout, and by the too liberal use of colchicum, the inflammatory symptoms will be less acute, although this may not prevent the limb from being equally helpless.

There can be no question that the more quickly we are able to stamp out a gouty paroxysm, the better

it will be in every respect for the patient. By so-doing we shall save him from long-continued confinement to the house, which involves the want of fresh air and exercise, and which thus acts prejudicially upon the constitution, and tends also to the aggravation of the disease.

It is from this stand-point that many advocates for the employment of colchicum defend the use of that medicine, and their position would be perfectly justified if they could insure immunity from the deleterious effects that surely follow from its frequent administration.

The rational treatment of a first severe attack of gout must greatly depend on the constitution of the sufferer, and on the symptoms by which it is attended. If he be robust, with a strong pulse and fever, the first indication is to lessen, by gentle but decided means, the strength of his pulse and the amount of his fever. In an instance of this kind it will generally be found that there exists more or less constipation of the bowels, that the tongue is foul, and that there is evidence of hepatic derangement. The greatest relief will, under such circumstances, be afforded by speedily establishing a free action of the bowels; and this may be done by medicines which stimulate the liver, and promote the emptying of the gall-bladder.

When the first necessary step has been taken, the next is to subdue the remaining fever by saline medicines, and to restore natural tranquillity to the circulation. This may be effected by the administration of potash or soda, in combination with lemon-juice, three or four times in the twenty-four hours, with the addition of half-drachm doses of spirit of nitric ether, and an equal quantity of tincture of henbane; or if the pain is very severe, a suitable dose of laudanum or morphia in camphor mixture.

When the feverish symptoms have subsided, a change may be made in the above medicine, and either the bromide or iodide of potassium may be given in combination with potash in a state of effervescence. It will be sufficient in ordinary cases to take a dose of

this medicine twice in the day. The bowels should be moderately stimulated every day by some suitable aperient; and the diet should consist of liquid nutriment in small quantities at a time. Beef tea, chicken or veal broth, with or without rice, arrowroot, and other forms of farinaceous food, may be employed; and no stimulants should be permitted. Warm lemonade, or toast water, will form the most desirable common drink, and may be taken without restraint, so as to encourage elimination through the skin and the kidneys.

As pain may be said to be the most prominent symptom in an acute paroxysm of gout, and is usually the one for which the patient most earnestly craves relief, it may be worth while to notice some of the external applications that have been made use of for the purpose. It cannot be said that our resources in this way are very satisfactory; for a great number of agents have been used at one time and another, and nearly all of them have been very generally abandoned as of little or doubtful utility. Among the number may be mentioned belladonna, aconite, and opium.

The last of these, in the form of laudanum, may perhaps be regarded as the most decided in its effects. When it is used as a fomentation with the addition of hot water, and of bicarbonate of soda or potass, it will frequently give ease; but it is not effective in reducing swelling, and it requires to be frequently repeated in order to lull the pain.

There is, however, a remedy that was lately mentioned to me by Dr. Webber,—namely, whisky, which I have tried in two severe cases with such marked and decided benefit that I should do wrong if I failed to record even this small experience of its effects. In the first case in which I tried it, the patient had been suffering severely for several days in his knees and left hand. He had had no sleep for some nights, and was unable to turn in his bed. I recommended him to apply the whisky to the painful parts; and when I saw him on the following day, he told me that after it had been applied to his knees for three hours, the pain suddenly

left him and the swelling began to subside, and the gout returned to the great toe where it had originally appeared. The pain had also left his hand, and the doughy swelling had much subsided. I advised him to apply whisky in the same manner to his toe. This he did, and the pain and swelling declined as rapidly there as they had done in the knees and hands. All that he now complained of was a slight stiffness in the left ankle joint. He was able to leave his bed in three days from the time he began to use the whisky, and was soon able to walk as usual. He took internally liquor potassæ, with iodide of potassium and eau de luce, and an occasional alterative pill, which re-established his health.

The second case was that of a butler, who, a short time previous to my seeing him, had fallen through the ice whilst skating in Scotland. He had never felt well since. I found him suffering from a severe attack of rheumatic gout; both his knees were greatly swelled and intensely painful, and his shoulder joints, particularly the left, were acutely painful. He complained also of great pain in his left side, over the region of the heart, but no abnormal sounds were discoverable. He perspired copiously, his urine was loaded with lithates, and he was feverish and thirsty. I directed him to apply whisky to his knees, and, on the following morning, I learned that the pain and swelling had entirely left them, but that the pain had shifted to the calves of his legs, and remained still in his shoulders. I advised him to apply the whisky both to his shoulders and to the calves of his legs. The result was the same as in the former case; for when I saw him the next day he said, "he had lost the pain in his shoulders, and could move his arms freely, but that his calves still felt a little stiff." He did not leave his bed for more than a week, not from incapacity to move, for he had no return of inflammatory action in his joints, but from feeling weak and ill. His system was very much out of order, as is usual in such an attack; his tongue was loaded; his bowels were constipated, and there were unmistakable signs of hepatic derangement. Until his tongue became

cleaner, he took, every six hours, a draught containing liquor ammoniæ acetatis, magnesiæ carbonas, magnesiæ sulphas, spiritus ætheris nitrici, and spiritus ammoniæ aromaticus, in mistura camphoræ; and at night, pills containing pilula hydrargyri, extractum colocynthis, and extractum hyoscyami—with the addition of pilula galbani composita, in order to relieve the oppression he experienced from flatus. At the end of a week he was able to resume his duties. The total quantity of whisky that he used as a local application to his different joints amounted to six bottles. Since this was written in the first edition I have been in the habit of using laudanum in addition to the whisky, and have proved it to be a most valuable adjunct. The proportion should be a teaspoonful of laudanum to a wine-glassful of whisky.

When gout occurs in an individual who has been previously subject to its attacks, it is requisite to modify the treatment which would have been applicable on the first occasion. It becomes highly important to support the strength of the patient, and not to lower his vital powers by the use of the common saline remedies that are required for the strong and robust. The medicine that appears to answer this end most completely is the liquor ammoniæ acetatis, combined with henbane and spiritus ætheris nitrici, and sometimes with an excess of ammonia, in the form of spiritus ammoniæ aromaticus, either with or without chloric ether, and given in camphor mixture. The same daily use of laxatives is required, and the drink and diet must be the same.

When the irritative fever, consequent upon the pain and the impure state of the blood, has subsided, the iodide or bromide of potassium may be given in combination with liquor potassæ, eau de luce, or spiritus ammoniæ aromaticus, in some light bitter infusion, twice a day.

When an anodyne is necessary, chloral hydrate seems to offer especial advantages in the treatment of gout. As a general rule it is only hypnotic, and is of little value against pain; but its power of diminishing

vascular fulness renders it more efficacious in gouty pain than in other varieties. When there is not severe suffering, but local uneasiness attended with general restlessness, the chloral will be found especially valuable. It should be given in a dose of from twenty to thirty-five grains, in a rather large draught of sugar and water; and half this dose may be repeated after the lapse of an hour, if the first should prove ineffectual.

When it is considered advisable to return to solid food, a selection should be made from white rather than from red meats. Chicken, boiled fish, and game, will, in the first instance, prove sufficiently nourishing and easy of digestion, and the stomach will not be over-taxed in disposing of food of this description. Weather permitting, the sooner the patient resorts to the open air, the more quickly will he recover from the depressing influence of confinement to his sick chamber.

In cases attended by greater depression, where the patient has had repeated attacks, and may be said to be worn out by his disease, when the blood is watery and the vital powers are reduced to a low ebb, it is necessary to adopt a very different treatment from that which is required by patients of the two classes already referred to. In these instances we find that the whole muscular system is enfeebled and the use of the joints impaired. The circulation is rendered weak by the loss of muscular power in the heart, and stagnation of the blood is the consequence of this defective mechanical force. The brain may become oppressed with serous apoplexy. The lungs and the heart itself may be rendered incapable of performing their proper functions, and the integrity of every organ of the body may be more or less affected. Our only chance of saving life will then be by resorting to stimulants, in order by their aid to increase the force of the heart, and to enable it to propel the blood with greater energy through the partially occluded and congested vascular system.

When the process of stimulation has been carried sufficiently far to effect some recovery of the circulation

the next object will be to maintain this status by still resorting to stimulants at proper intervals, and by employing medicines to give tone to the system, and to sustain the action of the heart. The various ethers (of which the best in these cases is the compound sulphuric), and eau de luce with tincture of hops, with or without an alkali, in a state of effervescence, will for a time prove the most eligible formula. In cases of this kind it is as necessary as in others to maintain a due action of the bowels daily, as a strong tendency exists to torpor and abdominal vascular plethora. The aperients administered should be of a warm and stimulating character.

In some extreme cases of atonic gout, where the heart is feeble and the blood poor, it is necessary to give steel and quinine with ether, or other stimulants to sustain the former and to improve the character of the latter, while at the same time the judicious use of dietetic support will be found highly valuable.

It will be noticed that in the treatment recommended for the different forms of gout no mention has been made of colchicum, but that stress has been laid upon the necessity of maintaining a due action of the bowels throughout the disease, and that the importance of promoting the functions of the liver by mild alteratives in conjunction with laxatives has also been pointed out.

Unless some form of treatment equivalent to this is adopted, it would be hopeless to attempt to cure the disease within any moderate period without resort to colchicum, which, by its specific action on the blood, and its cholagogue effect on the liver, rapidly produces an alleviation of the more urgent symptoms, but is more detrimental to the future welfare of the individual.

The cases that I have treated without colchicum, are now so numerous and the results have proved so satisfactory, both in the conservation of strength and in the long intervals which have occurred between the attacks, that I, although formerly in the habit of prescribing colchicum, cannot now do otherwise than record the result of my later experience. It is that gout can be as quickly and more surely cured without the agency of this drug than with it: when, by the judicious use of

medicines, the liver, bowels, and kidneys are made the organs through which the purification of the blood is effected.

The selection of typical cases for the purpose of illustrating the treatment of gout as it occurs in individuals of different constitutions, habits, and idiosyncracies, is attended with some difficulty, for as no two persons are exactly alike, neither are the symptoms identical that they present in illness; and the judgment of the practitioner will often be taxed to decide upon the most prudent course to be pursued in the management of each individual case. If the patient has been formerly treated with colchicum, and this medicine is withheld, both patient and physician must be prepared for an unusual delay in the removal of the more prominent symptoms of the malady; but I unhesitatingly say that the reward will be commensurate with the amount of patience displayed, and that it will take the form of a comparative immunity from future attacks, and of a comparatively trifling debility left behind when the paroxysm has passed away. At the same time, it must be acknowledged that there are exceptions to this as to every other rule, so that when an individual has for many years relied upon colchicum for the cure of his gout, and is still sensitive to its effects, and when his constitution has been undermined by the prostrating influence of the medicine, and both from physical and mental weakness he is incapable of enduring pain, the question arises whether we are justified, irrespective of future consequences, in prescribing the remedy once more. In certain cases the answer must undoubtedly be in the affirmative, but with this proviso or limitation, *that it should not be administered unless some counter-acting agent in the form of medicine is given at the same time, as the antidote to the bane*, to save the constitution of the patient from still further deterioration. It is neglect of this precaution that too frequently occasions the disastrous results attendant on an unrestrained use of colchicum and analogous medicines.

The two following cases may be regarded as exceptional in their treatment, owing to the individuals, the

latter more especially, having been in the habit of repeatedly resorting to a specific mode of treatment.

Colonel B——, aged sixty-five had suffered from gout for many years, and had been accustomed to employ colchicum for its cure. He was in the habit of taking a good deal of horse-exercise, and rarely walked. On one occasion he met with an accident whilst riding, by which his leg was bruised. The effect of this accident, not particularly severe in itself, was to induce very great prostration, so that he was taken home with difficulty. On examining his leg the muscular tissue seemed as if it had given way over the size of a crown piece, and it felt soft and boggy and was much discoloured. Blood appeared to be diffused beneath the skin, and on gentle pressure it felt as if a portion of the flesh had been excavated. This extreme attenuation of tissue and prostration were ultimately overcome by the administration of stimulants and quinine. No attempt was made to give an exit to the effused blood, for fear of occasioning a wound and it was ultimately absorbed in about six weeks. A year from this time the Colonel was seized with a very severe fit of gout in both feet and ankles and in his left knee. His prostration was extreme, and it was with the greatest difficulty he could be turned in his bed. He complained much of the pain he endured, and said he could not support it. His pulse was feeble, his tongue foul and flabby in texture.

In this case I felt it was absolutely necessary to give relief to his sufferings, and that promptly, for he declared he should die unless this could be done. I prescribed the following pill for him:—R Ext. acet. colch. gr. i., Pil. hydrarg. gr. ij., Ext. hyoscyami gr. ij., Ext. col. comp., gr. v., f. pil, ij.; hora somni sumendæ. Having had experience of the lax condition of his muscular tissue, I ordered him at the same time the following mixture, the fourth part of it to be taken every six hours:—R Inf. gent. comp. ad 3vj. Tinct. card. comp. 3iv., Ferri sulph. gr. viij., Quininæ sulphatis gr. viij., Acidi sulph. arom. 3i., Æther. chlor. 3i.; ft. mistura. His diet was strong beef tea, with brandy and

water. This gentleman made a good recovery, and enjoyed a better state of health for the next two years than he had done for many years previously, when he was again attacked with another fit of gout, which was preceded by a severe cold, and under which he died. He was then in the country, and under the care of his usual medical attendant, so that I am unable to say what was the nature of his treatment.

This case may be regarded as typical of gout occurring in a constitution where the blood and tissues were in a state of degeneration and deterioration, requiring the aid of a medicine like iron to give the patient [the only chance of recovery from his disease and prolongation of his life.

Mr. M——, aged fifty, had been a sufferer from gout for many years; his hands, feet, and ears bearing testimony to the fact from the copious deposit (tophi) that had taken place in them. He had long been unable to walk with any comfort, and his ordinary exercise was taken on horseback. He had felt rather better than usual, when, endeavouring to turn the stiff handle of the door of a railway carriage he strained his right wrist. Violent pain was the result, and a gouty paroxysm quickly ensued. His knees and feet were speedily attacked, but the severity of the seizure was confined to the hand and wrist, which rapidly swelled and were very painful. A strong decoction of poppy-head, laudanum, and soda afforded temporary relief. The medicines prescribed, which, in an original attack of gout, would soon have conquered the disease, appeared powerless to exert any beneficial effect on Mr. M——, and he begged for colchicum, as he felt unable to bear his pain and discomforts. His request was complied with, and a ten minim dose of the wine of colchicum was given every six hours, together with the mixture he had been taking, which was composed of the iodide of potassium with carbonate of potash and spiritus ammoniæ aromaticus.

The result of this addition to his treatment very soon became manifest. He began to feel freer from pain, and the swelling of his hand abated. On the

subsidence of the swelling the colchicum was omitted. He took some time to rally from the effects of his attack, although the quantity of colchicum given was comparatively small. His tardy convalescence was due to the frequent recourse he had had to specific treatment in his numerous attacks of gout. A few months after this he was again the subject of a paroxysm, and more recently of another that confined him to his house for eleven weeks. This gentleman was originally possessed of a fine constitution, and his powers of digestion were so strong that he was capable of consuming a quantity of wine without his head being affected. This immunity from the pain that ordinarily attends the pleasure of indulging in stimulating beverages was in his case attended by great subsequent suffering when gout attacked his system; and it would have been better for him had he experienced the ordinary monition of headache in early life, to have warned him that what then appeared a harmless indulgence—from no ill consequences immediately ensuing—must subsequently be paid for with a heavy addition of accumulated interest.

A gentleman aged forty five, who was naturally active, had been subject to occasional attacks of gout for twelve years. He had until within the last four or five years taken colchicum during the paroxysms, but latterly had resorted to Laville's medicines. He was able to subdue the pain and inflammation by their use; but the returns of gout had become more frequent. On my first examination of him I found the action of his heart very feeble, his pulse small, and his tongue so singularly white that it could be described as being "chalky." His blood was evidently deficient in red corpuscles and fibrin. Some months after this interview, this gentleman was seized with a severe fit of gout in his feet, ankles, and knees. He was at once prostrated, and lay in bed without power to move the lower part of his body. His pulse were scarcely perceptible, his appetite was impaired, and his nights were sleepless. His tongue was whiter and more deficient in colour than ever, and had an appearance as if it had been macerated. The bowels were confined.

The medicines that were ordered for him were gentle laxatives and alteratives at bed time, with quinine, dilute nitric acid, and chloric ether, every six hours. His feet, ankles, and knees were kept constantly moist with lint saturated with whisky. This treatment was continued for three weeks. He experienced no pain unless he attempted to move; his nights were good except on two occasions, when it was necessary to give a small dose of chlorodyne, which had the effect of procuring sleep. His appetite returned after he had taken a few doses of quinine. His diet was confined to chicken and soup, and his beverage to weak whisky and water. Under this treatment he slowly but decidedly improved; the inflammation and pain gradually subsided, and he became able to move his limbs. A check to his progress arose from a severe lancinating pain of a rheumatic kind, first in his left groin, extending down to the thigh, and then in the right on attempting to raise himself from his couch. This was an affection of the sciatic nerve. On tracing back his history, it appeared that twenty years previously he was thrown on the pommel of his saddle, and severely strained himself; yet notwithstanding this accident, on reaching his destination he proceeded to skate, he being a proficient in the art, and added still more to the tension of the strained muscles by carrying under each arm one of his younger sisters across the ice. This was the finishing stroke to his further exertion. He was taken home, and was confined to his bed for several weeks.

A recurrence of pain without any inflammatory action in a part which had for so many years remained quiescent, pointed to a necessity for overcoming a local weakness, resulting from the enervating effects of a gouty and impoverished condition of blood, and the medicine that appeared to be demanded was iron, to give more tone to the system, and to supply the blood with the element in which it was deficient. A mixture, composed of the tincture of sesquichloride of iron, quinine and chloric ether, was taken twice a day with good effect, and he continued also with the laxative pill.

The diet was now ordered to be more generous. The whisky was omitted, and two fair-sized glasses of old port wine were to be taken during the day in its stead. After two or three days the pain entirely ceased in the groins. On leaving his bed his observation was that he felt strong internally, but his lower limbs were weak. The former part of this observation was quite confirmed by the great improvement that had taken place in the power of the heart, and the force and volume of the pulse, and by the increased redness of his tongue.

This gentleman displayed a singular forbearance in abstaining from Laville's medicines, which he had close at hand, being determined to exercise patience in the treatment of his gout.

Mr. P——, a gentleman who died at the age of eighty-five, from the effects of an accident, had previously enjoyed good health, and retained his energies and faculties to the latest hour of his life, excepting when he had suffered from gout, which he never nursed. He was rarely ill. He always fought against his enemy, and was invariably victorious. When the gout attacked his knees he would instantly send for a cupper, and lose a few ounces of blood from the part affected. He would occasionally have recourse to a couple of grains of calomel with colocynth and henbane, but he never ventured to take colchicum. He was accustomed to drink a bottle of port wine daily, which he abandoned when the paroxysm was upon him, and lived on very low diet. On one occasion, when he was more than usually gouty, his brain became affected, his memory failed him, he forgot the day of the week, and when he saw the sun shining he thought it was the moon. He took two of the pills described above, and in the course of a few hours all cerebral disturbance had vanished. Although he had had numerous attacks of gout throughout his long life, he had not a vestige of any tophaceous deposit. He was occasionally subject to sharp attacks of diarrhœa, which invariably appeared to carry off along with it the threatened symptoms of a gouty paroxysm. These attacks appeared to be critical, and

they were readily controlled by a few doses of liquor opii sedativus and tinctura cinnamomi, when they had proceeded to a sufficient length. Instead of being weakened, he always appeared to be better for them. If he had been in the habit of temporizing with his gout by taking specifics for it, he could not, at his advanced period of life, have withstood the depressing action of a copious diarrhœa in the manner he did. His system had never been undermined by a resort to remedies of a partial or specific nature for the cure of his gout, and it was thus enabled to bring to bear all the vigour of a sound constitution to assist in freeing it from a temporary excess of the gouty elements.

Speaking generally, it may be said that there is no organ of the body which is exempt from gout, or which may not be disturbed in function when the poison is present in the system. It is not uncommon for the subjects of the gouty diathesis to complain of transient pains in different parts, quite unconnected with any definite gouty seizure. The nose and the external ear are both liable to be thus affected. Some time ago, I was visiting a late M.P., who had suffered from gout, when he suddenly uttered a cry almost of agony, exclaiming, "Oh! my nose, my nose!" He had suddenly felt, in that feature, an intense pain, which fortunately only lasted a few seconds, but which he described as being unbearable. A similar pain sometimes occurs in the external ear, and it is not uncommon to find this part the seat of tophaceous deposit.

When gout suddenly leaves an extremity and attacks some vital organ, as the head, lungs, or heart (a transference of morbid action which is known as metastasis, or retrocedent gout), there is generally great danger; and, unless the poison can be speedily eliminated from the system, so as to relieve the suffering organ, this is likely to become the seat of congestion, which may not only conceal the true nature of the malady, but may also lead to treatment of a very undesirable kind. When the brain is affected, the amount of cerebral disturbance is sometimes excessive, resembling acute mania; and I have known this mental

disturbance treated by sedatives, to the great aggravation of the symptoms, or even to the death of the patient. In former times, such cerebral excitement would have been treated by cupping at the nape of the neck, generally with marked advantage; but, as blood-letting is no longer tolerated by the profession, we must be content with the two other remedies on which alone, in such cases, reliance can be placed, namely, calomel and blisters; the calomel to relieve internal plethora, and the blisters as local derivatives. When the lungs or the bronchial tubes become the seat of the metastasis the same measures, with modifications, should be employed.

A similar plan of treatment is also demanded when the heart becomes affected. To take an illustrative case, I was called to a gentleman aged 54, the subject of hereditary gout, and whose father had died of it, as the patient told me, from its having attacked his heart. My patient had not suffered an attack for three years. His occupation required him to take long and fatiguing journeys; and at the time referred to he had just returned from Russia. The exhaustion produced by travelling, together with the irregularity of his meals and the inferior quality of his food, so deranged his digestion as to bring on a gouty seizure as soon as he reached England. The disease first appeared in his right knee, which became swollen, but not very painful. What pain there was suddenly subsided; and thereupon he was attacked by intense palpitation. The pulse was scarcely perceptible at the wrist, he felt giddy, and was in a state of great apprehension. On listening to the heart it became a matter of surprise how it could at all maintain the circulation; for its throbbing and tumultuous action conveyed to the ear the notion of a ball being shaken in a bag. This state of things had continued for three days. I ordered a blister to be placed over the cardiac region, and directed that it should remain for twelve hours, and then be replaced by a warm bread-and-water poultice, to be renewed every six hours. As soon as the action of the blister commenced, the patient fell asleep, and slept for many

hours. The next morning I found that the blister had risen well, and that the palpitation had ceased, except for an occasional intermission of the pulse, which was full and soft. In two days, all symptoms of cardiac disturbance had ceased, and the swelling of the knee had also disappeared.

Whenever the heart becomes affected, either in gout or rheumatism, it will usually be found that there is congestion of the liver, often attended by enlargement. When this is so, the portal circulation is impeded; and a due supply of blood is no longer sent to the right side of the heart. In the case above recorded, the liver could be felt four inches below the ribs.

The preceding cases sufficiently illustrate the general principles on which the treatment of the malady should be based, and these may be said to rest upon the two processes of elimination and restoration. In reference to the first of these, it has been most satisfactorily proved that gout is due to certain morbid principles, such as urate of soda, with which the blood is polluted, and that this pollution has arisen from defective digestion and assimilation of food, and from impaired glandular secretion. Our object therefore is to free the system from this *causa morbi*, by the employment of those medicines that act on the bowels and glandular system—the liver more especially—and indirectly on the kidneys, by relieving them of the vascular plethora which affects them when a gouty condition of the blood prevails, so that art may thus accomplish what nature has proved unable to perform. As regards the process of restoration, our care should be that in relieving the body of its gouty elements we do not by our medicines increase the already existing debility of the patient, and thus retard his restoration to strength and health. Beside these general principles, however, nearly every case will require to be considered with reference to its peculiarities, and with reference to the complications it may present. These will not usually offer much difficulty to an experienced practitioner; but there are some sequelæ of an attack that should always receive careful attention. When the joints, the

ankles more especially, have been rendered long useless by the invasion of gout, it is often a considerable time before they gain sufficient strength to support the weight of the body, and to enable the patient to walk. The longer the time they have been thus affected, the greater will be the difficulty of restoring strength to the unsound and relaxed ligaments and muscles. Not only are all the structures forming the joints more or less loosened in their attachments, but the vessels are in a relaxed condition, and the return of blood from the extremities is in consequence impeded. Hence swelling of the feet and ankles commonly occurs after the gouty paroxysm has subsided. A deposit of urate of soda is also more likely to take place and to remain permanently in joints which are thus affected; and it is a matter of great importance to the future welfare of the patient that something of the former tone and tension should be as speedily as possible restored to them. If this is neglected, not only do the joints become weaker and weaker, until at last they become almost useless; but the health will suffer from incapacity to take exercise, and there will be in consequence a greater liability to a recurrence of the disease.

There is a striking resemblance between the joints thus affected consecutively to a gouty seizure, and the ordinary consequences of a severe sprain of the ankle. In both cases there is the same dread of putting the foot to the ground, or of resting upon it. There is the same complaint of looseness and want of tension in the joint, as if every one of its constituent bones were loosened. It is necessary in both instances to employ artificial support, and to supply by carefully applied pressure the loss of power which is due to a relaxed condition of the muscles, ligaments, and vessels. In the case of gout this should not be attempted until we are satisfied that the paroxysm has passed away, and that the blood of the patient no longer contains an excess of the *materies morbi* that produced his disease. A suitable bandage should then be lightly applied over the whole foot, and passed two or three times round the ankle, in the form of a figure of

eight. Day by day, for the space of a week, this pressure, or the tightness of the bandage, should be slightly increased. At the end of that time soap plaster, or what is better, Tarrant's plaster, in strips of from an inch and a half to two inches wide, should be lightly applied in the same manner as the bandage, so as to cover the whole foot and ankle joint, and on a renewal of the strapping the pressure should be gently increased, but so as to give no pain or discomfort to the patient. The advantage of the plaster is two-fold. By the exclusion of air and by its close approximation to the skin, it produces a more or less copious exudation from the capillary vessels, and this continues only so long as the vessels are in a state of relaxation. The somewhat greater stiffness of the plaster when compared with a bandage contributes to the greater support of the weakened joints. If there should be any doubt or hesitation as to the precise time when bandaging and plastering should be commenced, these processes may be preceded for a week by bathing the affected joints, whether knees or ankles, twice a day with a strong tepid solution of Tidman's sea salt; and by employing gentle friction afterwards, with some mild, soothing liniment, such as camphorated oil, with an equal quantity of the compound camphor liniment, and with or without laudanum, according to the degree of tenderness or pain.

CHAPTER VII.

TREATMENT (*continued.*)

THE carrying out of the principles laid down in the foregoing chapter must often require a larger choice of remedies than is afforded by the few which have been mentioned; and it therefore seems desirable briefly to describe the properties, and the advantages, and disadvantages in gout, of a few of the more potent of the medicines which have from time to time been used for its relief. Among these the first place must be given to colchicum, the root or seeds of the *Colchicum autumnale*, or meadow saffron, a plant that was introduced into modern medicine by Baron Stork in 1763. There is little doubt that it is the remedy mentioned by Alexander of Trales, about the year A.D. 580, and alluded to by Paulus Ægineta, Avicenna, Serapion, and Mesue.

Numerous medical men have united in extolling the value of this drug in the treatment of gout. Sir Charles Scudamore says, "It must be admitted to be a valuable medicine by all who have had sufficient opportunity of putting its merits to the test." Sir Thomas Watson in his Lectures on the Practice of Physic, expresses himself very positively on the subject. In reference to the acute paroxysm he remarks that, "Colchicum, judiciously given, may be fairly accounted a specific; and that the drug has certainly the property of easing, in an almost magical manner, the pain of gout. How it operates is not so clear. It is apt to produce nausea, faintness, and diarrhœa: but its curative influence is not conditional upon the occurrence of these symptoms. Sometimes the rapid disappearance of the gouty inflammation is its only perceptible effect.

The patient may be in helpless agony with a tumefied red-hot joint to-day, and walking about quite well to-morrow. The colchicum is therefore plainly an anodyne."

Dr. Gairdner says, "There is no doubt that colchicum is one of those drugs whose claim to be considered is well established. Its effect in freeing the body from disease bears no adequate relation to its immediate visible and tangible, or, as it has been called, its physiological effect on the system." He ridicules what he terms the nearly exploded doctrine of the old humoral pathology, that gout is due to a morbid matter in the system, and must be turned out; and combats the assertion that, however great the degree of relief immediately afforded by colchicum, it tends to the eventful and permanent increase of the disease, or that it lays the foundation of other far more serious evils. Dr. Gairdner asserts that these assertions are "vain and futile."

Dr. Gairdner expresses his fear "that we are hardly yet prepared to explain the action of colchicum," but agrees with Sir Henry Holland in the expectation "that from the striking effects observable in the treatment of gout, a strong light may be shed on the pathology of the disease;" and concludes by observing that "it is undoubted that no sufficient explanation can yet be given of the action of colchicum; in other words it must be classed among specifics."

Dr. Garrod remarks, "without attempting at present to explain how colchicum acts in controlling gouty inflammation, I shall content myself in asserting that it does so in a most marked degree." He confesses that "a still more searching investigation, not only of the mode in which the action of the colchicum is produced, but likewise as to the real effect of the remedy under different circumstances, is a desideratum, and one I trust to be enabled one day to unravel." He then enters upon the best mode of administering this drug. If cathartic action is required, it is better to give an aperient along with the colchicum, for when much purging and vomiting result from the colchicum, nervous

and vascular depression likewise follows. He considers it of advantage to give a full dose of colchicum at the commencement of the treatment; for example, half a drachm to a drachm or more of the wine, and to follow it up by smaller doses, as from ten to twenty minims, two or three times a day, carefully watching its effect on the pulse, and never allowing the production of sickness or depression. Dr. Garrod observes that when colchicum is injudiciously administered it gives rise, not only to nausea, vomiting, and extreme depression, but occasionally to a very obstinate and peculiar kind of diarrhœa. When great depression is produced by colchicum, gout is apt to recur soon after the patient has rallied from the effects of the drug. He recommends that in acute cases the influence of colchicum should be continued in a mild and gradually diminishing degree for several days after the inflammation has subsided; that in chronic gout it should be administered with great care, and also in the intervals between attacks of gout. Dr. Garrod concludes his observations on the therapeutic action of colchicum by advancing two opinions; first, that when it is carefully prescribed it has no tendency to lessen the intervals between the gouty paroxysms, or to render the disease chronic in character; and secondly, that colchicum may often be given with advantage to gouty subjects as a cholagogue, in lieu of the preparations of mercury.

Dr. Bence Jones, in common with other writers on colchicum, is at a loss to determine its special *modus operandi*; and he asks the question, How does colchicum stop the excessive oxidation set up in the parts where the urates are most liable to accumulate, partly perhaps in consequence of the non-vascular nature of the textures?

He does not believe that colchicum acts as a diuretic, and throws the uric acid out of the blood (and even this effect would give no explanation of its action on the joint); or that it promotes the oxidation of the uric acid by directly furnishing oxygen; and remarks, "there remains the unproved assumption that colchicine,

like these other alkaloids, acts on Dr. Liebreich's protagon, that the alkaloid has a chemical action by actual contact with the nerve substance of the blood-vessels, where the gouty inflammation is going on, causing such an action on the vessels that the inflammation ceases."

Dr. Bence Jones acknowledges that "this assumption makes the action of colchicine comparable with the action of veratrine, strychnine, and morphine, all of which act with intensity on the nervous substance; and this assumption leads to a conjecture as to the action of quinine, that it also may act on the nerves of the blood-vessels, stopping the internal congestion on which the external rigor of ague depends. The deafening and prostrating effects of large doses of quinine can only arise from an action on the auditory and cardiac nerves; and the arrest or prevention of an ague fit can best be comprehended by the assumption that quinine, among other actions, acts on the nerves of the capillaries, stopping congestion, whilst colchicine acts on the same system of nerves, stopping inflammation."

In alluding to M. Laville's specific Dr. Bence Jones thinks that veratrine is probably the active alkaloid; with most probably a small amount of morphine dissolved in the wine with which it is prepared; but whatever its source, it must have an action corresponding to colchicine, and that the good and the harm from this specific cannot be much more or less than the good or the harm of colchicum. It cuts short the attack, and thus saves the injury to the joints from the continuance or severity of the inflammation; but it does this by stopping the oxidation of the urates in the textures, and hence a relapse or renewal of the inflammation more quickly and easily takes place.

"Moreover, like all other specifics, it gradually loses its effect when it has been used in many attacks; and one at least of those who have been its most public supporters has abandoned it for some fresh though far less potent remedy."

Various quack preparations, such as Eau Médicinale, Wilson's Tincture, and Reynold's Specific, all owe their

efficacy to the colchicum they contain. All those who have written upon gout express themselves strongly upon the power of colchicum to control the urgent symptoms; but none of them venture to assert that its after-effects are not often fraught with danger. Many physicians have expressed themselves strongly on this subject. Dr. Petit had an idea that it caused gouty attacks to become more frequent and chronic; and the late Dr. Todd, in his Clinical Lectures, expresses the similar opinion that although colchicum shortens the duration of the fits, it also diminishes the intervals between them, and that the system gets accustomed to its use, as it does to opium, so that the dose must be increased in order to keep up the effect.

My own impression is that the action of colchicum in relieving gouty inflammation may be due to its peculiar property of modifying the red corpuscles, and of rendering the blood more fluid and less adhesive, so that its passage through the distended capillaries is promoted, and the mechanical pressure that was productive of pain is removed. The question naturally arises, As colchicum relieves what is ordinarily regarded as inflammation in gout, why should it not produce similar effects when given in the various forms of common inflammation? I would venture to suggest that the marked difference may be due to that special peculiarity or constituent of gouty blood, which prohibits the occurrence of the ordinary sequelæ of true inflammation; and that this may possibly be the excess of urea which such blood contains.

The effects of colchicum, when injudiciously administered, are not confined to the action I have ascribed to it on the blood-globule, which I regard as being its primary operation, but extend also to the heart, liver, and stomach. On the first of these organs it operates more powerfully than digitalis; on the second it is frequently more energetic than calomel; and on the third it produces occasionally nausea, vomiting, and anorexia, and impairs the digestive function by diminishing the power of the nerves that supply the organ.

It is admitted that colchicum, like other specifics, loses its power when constantly employed; and the patient fails to obtain relief from it unless he increases the dose. This he may do until at last the medicine becomes inert. He has in fact so changed the character of his blood and constitution, that to him it is no longer a specific.

Long-continued observation of the effects of colchicum when it has been repeatedly resorted to for the cure (or rather alleviation) of gout, has impressed me with the conviction that its ultimate tendency is to destroy the integrity and vitality of the blood, and that it not only renders the attacks of gout more frequent, but subsequently more difficult of removal. In extreme cases, it impairs both the mental and physical faculties, the latter usually at an earlier period than the former. That these results succeed to a deteriorated condition of blood, will not, I think, admit of dispute, as the frequent pallor, and the diminished energy of the patient plainly show that his blood has become impoverished during the progress of his attack; and it is found, as a rule, that some preparation of iron is required for the restoration of the red corpuscles.

It does not however follow, because the abuse of colchicum leads to such disastrous results, that it is *never* safe to use it as a therapeutic agent. The indications for its employment may indeed be said to be almost exceptional, and they are analogous to those in which we should have no hesitation in abstracting blood from the patient. If he could afford to lose blood, he may safely venture to take colchicum, as its effects are very similar in their result to those of depletion. The more frequent the abstraction of blood, the greater will be the diminution of the fibrin and red globule contained in the remainder, and the operation of colchicum produces similar conditions. I have many times found it desirable to employ the medicine, but I have never done so without the addition of ammonia, or some other stimulant, to sustain the power of the heart, and to obviate as much as possible

the subsequent depression of inervation; and, in the chronic form of gout, it should never be prescribed unless in combination with either steel or quinine.

When once a person has taken colchicum for the cure of his gout, and has experienced its effects in alleviating his pain, it is often a matter of some difficulty to induce him to forego a repetition of the medicine, notwithstanding he may be told that such forbearance will be better for him in future. One of the dangers attending the improper use of the medicine arises from the proneness of patients to take the management of their gout into their own hands, without consulting their medical adviser. The physician who is consulted about a first attack of gout may perhaps write a prescription containing colchicum. The medicine acts like a charm, the patient's agonies are assuaged, and he is unbounded in his gratitude for the relief afforded him. He will naturally esteem the few words that have been written for his benefit, and which have afforded him so much comfort, as if they were of priceless worth. On the next threatening of his malady he does not wait to send for his physician, but at once resorts to his former medicine, feeling that he possesses the power to master his own ailments. It is but too often the case that such persons will boast when talking of their complaints, "Oh, I can cure my gout now; I do not want a doctor." A patient who acts thus may be described, to employ a familiar illustration, as one who is "repeatedly scotching his snake but never killing it," until at last as I have too often witnessed, his snake will kill him. Perhaps the blame may not in all cases rest entirely upon the sufferer, as it is possible that the physician had omitted to tell him of the risk he would run by undertaking the responsibility of self-medication; and, that although he, the physician, felt justified in prescribing a powerful medicine like colchicum in the particular instance, the patient might entail upon himself serious injury by the employment of the prescription at a future period. In order to show that such a risk is neither imaginary nor exaggerated, I will relate one case out of many, in which the duration of life was

cut short by the habit of constantly resorting to colchicum for the cure of gout.

Thirty years ago I called on a gentleman, aged sixty-five, whom I never remember otherwise than as being remarkably pale and pasty-looking. He was, notwithstanding, a fine-grown man, and to appearance well fed. His flesh was soft and flabby. He indulged freely in the pleasures of the table, and took but little exercise, excepting in his carriage. On this occasion I noticed that his pallor was greater than usual, and I naturally inquired how he was. "Oh, I am very well," he said, "but I have just got rid of a fit of gout." I was aware he was his own medical adviser, so I remarked, "I presume you have cured it by colchicum." "Yes, I have," was the answer. I find I can always cure myself by taking it." Under the circumstances, he being a relative, I ventured to give him my advice, and warned him of the danger he was incurring by resorting so repeatedly, as I knew he did, to colchicum. He thanked me, and said, "You may feel no apprehension at my want of discretion, for I am most careful how I take it, and I make a point of always carrying it off by suitable aperients."

I saw this gentleman two months afterwards, and the moment he saw me, he exclaimed, "I have just got rid of another fit of gout, but remembering what you said, I did not *take* any colchicum"—laying a marked emphasis on the word. "Perhaps," I said, "you applied the remedy externally." He manifested some surprise at my conjecture, and confessed that he had done so.

That night he retired to bed at his usual hour, but he had been upstairs scarcely five minutes when he rang his bell. His servant quickly answered him; and on entering his master's bedroom he found him dead, seated sideways on a chair, with his right arm hanging over the back of it.

This gentleman's death probably arose from syncope, occasioned by the exertion of ascending the stairs. No suspicion was ever entertained that he had disease of the heart; but doubtless the tissue of this organ was

as flaccid as that of his external muscles, and this degeneracy, if not occasioned, was most probably aggravated by his injudicious use of colchicum.

Perhaps the most striking example of what may be described as the almost magical effect of the drug, occurs when it is given to subdue an attack of gouty iritis, or inflammation of some other part of the eye. In such cases we have intense pain, together with heat and redness. If these symptoms are not subdued, the sight will be lost; but the action of colchicum in unloading the distended capillaries is sometimes so rapid, that we can almost fancy we see this result take place, and the eye return to its natural appearance.

In this form of disease, colchicum is a truly valuable remedy, but it is seldom required more than once in the lifetime of a single patient.

The medicine that ranks next to colchicum in importance is certainly calomel, administered in the doses in which, according to the faith of our forefathers, it acts energetically in promoting the secretion, or at least the discharge of bile. It is well known that this time-honoured view of its operation was impugned, some years ago, by Kölliker, and that more recently a committee of the physiological section of the British Medical Association, consisting of Dr. Bennett and other gentlemen, undertook to investigate the question by a series of experiments. Dr. Bennett and his coadjutors arrived at the conclusion that calomel does not increase the formation of bile; and, if we were to discard clinical experience in their favour, we should be compelled to say either that this medicine has no effect upon the liver, or at least, that it has no such effect as that which has always been attributed to it. The great lessons of our art, however, are learnt at the bed side; and our experience of the action of calomel, when properly administered in judiciously selected cases, hardly permits us to arrive at such a conclusion, or to accept the results of experiments on healthy dogs as a complete refutation of all that we thought we had gleaned from the most careful possible study of the phenomena of disease in man. Experimental

Physiology has its high and great uses, but it has also its proper limits; and it is difficult not to feel some sympathy with the scorn with which Duchenne speaks of the young philosophers who seek, by the galvanization of rats and rabbits, to overturn the conclusions at which he has arrived after a long life spent in the application of electricity to disease. The experiments of Dr. Bennett and his friends may have been conducted with proper accuracy; but they will hardly persuade wise men to lay aside a proved and trusted weapon. It is not necessary here to enter into any argument on the question, whether calomel does or does not stimulate the liver to an increased secretion of bile; and I will content myself by saying that to me it has always appeared to do so, and that the milder mercurials, such as blue-pill, and mercury with chalk, have appeared to exert a similar action. Leaving this doubt, however, to be debated and settled by physiologists, at their leisure, I will approach the matter from the point of view of the practical physician, and will proceed to state some of the conclusions to which I have been led by a careful study of the action of calomel in acute diseases. I would venture to suggest that so valuable a medicine should not be abandoned or neglected because it does not appear to produce a secretion of bile in dogs; nor should we on that account hesitate to employ it discreetly in the severe affections of the human liver.

When calomel is given with the intention of unloading a congested liver, its first operation appears to me to overcome the constriction that then usually prevails at the neck of the gall-bladder, and in the biliary ducts; and the result is to produce a decided and frequently a large flow of bile into the bowels.

It has also seemed to me that the origin of hepatic congestion could in most instances be traced to the retention of bile in the gall-bladder, and that the discharge of this bile has been attended with decided relief to the more prominent symptoms of oppression under which the patient laboured, whether of the head, heart or lungs. I have also observed that, so long as the liver

is congested, the *fæces* will contain an excess of bile; but, when the congestion is relieved, the evacuations, will frequently, although not always, appear devoid of bile pigment. This is an important result, which points to the necessity of withholding the remedy in the presence of an impairment of the secreting power of the liver. It may perhaps be assumed, when calomel has been administered for a time, and is no longer required, that the liver fails to secrete even its normal amount of bile, because it has been enfeebled or exhausted by an over-powerful stimulus. It is not too much to assert that calomel is to a torpid liver or occluded gall-bladder, what brandy is to a feeble heart; and that neither of these agents should be used unless under the pressure of urgent circumstances, or in the treatment of severe disease.

When the bowels cease to discharge bile, the operation of calomel is transferred to the salivary glands, and an increased flow of their secretion is the result; but so long as bilious motions are voided, the salivary glands, as a rule, remain unaffected. This fact was recognised in former times, when salivation was itself regarded as a remedy for disease, the mercury being then combined with opium, in order to retain it in the system.

It may, I think, be safely said that a congested liver is, as a rule, the result of a congested gall-bladder; for, when the bile is retained for a longer or shorter time in this reservoir, not only do certain chemical changes occur in the bile itself, but the bowels become torpid and constipated from the loss of their proper stimulus; and this torpor is a fertile source of venous and arterial congestion or plethora. Hence we frequently witness oppression in the heart and lungs, when the liver contains more blood than the venous plethora which exists in the portal system and in the ascending vena cava will allow it to transmit. The right cavities of the heart become overloaded in their turn, and the disorder of the central organ extends to the lungs, the brain, and the kidneys. If the distended gall-bladder is unloaded, and its contents are poured into the intes-

tines, either by the aid of calomel or any other cholagogue, speedy relief is afforded to the patient. When once a free action of the bowels is obtained, the redundant blood contained in the liver finds an exit, and the heart, lungs, head, and kidney are freed from the threatened danger. There is no medicine, excepting colchicum, which accomplishes this object so rapidly as calomel, and hence the great value of the latter in such conditions of disease.

Although the immediately beneficial effect of calomel appears to depend on its power of stimulating an occluded gall-bladder to expel its contents, this is far from being the only effect that it produces. The whole of the secreting and excreting organs of the body are found to be much influenced by it, and it therefore should never be employed excepting under the pressure of urgent symptoms. When used with due precaution, it is often of great value in the more severe forms of gout in robust individuals, by affording relief to various organs which may be labouring under congestion.

In the early period of a severe attack of gout, when there is fever, quick pulse, and elevation of temperature, these symptoms may be taken as the best evidence that calomel will be useful. The desired effect may often be obtained from a single dose, for which the following is a convenient formula:—Hyd. subchlor., Pulv. Jacobi, Ext. hyoscy., āā gr. ij., Ext. coloc. co. gr. v.; M., ft. pil. ij.; h. s. s. These pills will usually procure a good night, and a mitigation of all the more prominent symptoms. In the morning a seidlitz powder may be taken with a small teaspoonful of sal volatile, which will ensure a mild and free action of the bowels. When bilious vomiting is present small doses of calomel with the extract of hyoscyamus may be given every six hours, followed an hour after each pill by a dose of suitable effervescing medicine; but, if much pain be suffered, the hyoscyamus may be omitted, and powdered opium or Dover's powder may be substituted for it. It will rarely be required to administer more than three or four of these pills, and they also should be followed

by a seidlitz powder. It may be said that cases requiring this treatment are exceptional, but when they occur, it is of the utmost importance *to control and remove such symptoms as speedily as possible*. I have found no plan succeed better than this, or contribute more decidedly to shorten the duration of a severe fit of gout when ushered in by such a commencement. I have more than once seen brandy and other stimulants administered in large doses, but without success, to relieve oppression of breathing and spasm in gouty individuals when, if a decided dose of calomel had been given, the *cause* of the spasm would probably have been removed, and the patient would have recovered. The symptoms which chiefly led to this practice of stimulation were the intense coldness and chilliness which were complained of by the patients, and were followed by a rigor which induced the belief that it was necessary to combat these sensations by the influence of stimulants. One of the most valuable and "ready" remedies in such a condition is a mustard emetic, drunk as hot as the patient can swallow it, and followed by as much hot water as he can be persuaded to take. The action of vomiting produces, by mechanical pressure, a discharge of bile from the gall-bladder, and ordinarily affords great relief. When this result has been attained, the patient is usually out of danger, and resort may be had to suitable remedies for relieving the congestion of the liver that has been the primary cause of the attack.

The presence of acute pain is so prominent a symptom in gout, that it is necessary to give an equally prominent place to opium, the remedy by which all forms of pain may be more or less completely controlled. In gout, however, regarded only with reference to its power of giving immediate relief to suffering, opium is inferior to colchicum; and it cannot be administered at the outset of a paroxysm. Before it can be usefully employed, it is necessary that the secretion and discharge of bile should be established, and a due action of the bowels obtained; that the tongue should have parted with its brown or yellow colouring matter, and the kidneys have

performed their proper function. When these results have been accomplished, we may give opium in one or other of its various forms with the most marked benefit, and it will not be found to interfere with the operation of other medicines, which assist in freeing the blood from the gouty poison.

It must be acknowledged that opium is one of the most valuable medicines we possess for alleviating the pain consequent upon gout, but that its value, as has before been said, depends entirely upon the time and manner of its administration. If, as is sometimes the case, an individual has an intolerance of this drug, it should not be given by the mouth, but rather by the method of subcutaneous injection. A solution of morphine containing one grain in six minims is employed for this purpose, and from one to three minims may be injected at a little distance from the seat of pain. If the pain is in the toe or foot, the morphine may be injected at the inner side of the calf of the leg; if in the knee, at the inner side of the thigh; and if the pain is in the upper extremities, the morphine may be injected at the inner part of the upper arm. There is scarcely any pain in the operation, especially if the syringe is in good order and well pointed, and the relief to the patient's suffering is almost immediate, so that, if he should feel any apprehension of pain from the puncture he may fairly be reminded or informed that a moment's inconvenience is cheaply purchased by freedom from suffering for several hours. The late Dr. Anstie, who had great experience in the subcutaneous injection of morphine and other alkaloids, spoke very highly of the results obtained by him; and Dr. Bence Jones also commended the practice, but in an instance to which he refers he did not content himself by the injection of morphine, but gave the patient two doses, of a drachm each, of Laville's Tincture, a preparation which is believed to contain colchicum or some other drug of a kindred nature.

It is sometimes necessary in very severe cases of gout, when there is great congestion of the liver, and other organs and the patient is racked with pain or sickness,

to combine opium with calomel, so as to avail ourselves of the conjoint operation of these two valuable medicines. It is found that this combination is often attended with the happiest results. The action of the calomel in unloading a gorged liver, and in relieving the congestion of other organs, is not prevented by its association with opium; and the two act harmoniously together—the one as a depurating or eliminating agent, and the other as a sedative.

The following case will illustrate the advantage to be obtained by resorting to opium instead of colchicum for the relief of pain in gout:—

A gentleman, aged sixty, had been a sufferer from gout for many years. Deposits of urate of soda had taken place around his ankle joints which caused him to walk with great difficulty. He had been in the habit of constantly resorting to colchicum whenever he experienced any gouty twinges. Latterly he had taken Laville's tincture and pills, but his gouty attacks became more and more frequent and he seldom passed over three weeks without a paroxysm of his enemy. He had been repeatedly told that he was undermining his health and strength by acting as his own medical adviser; but he still persevered in his own course, until at last a fit of gout more severe than any previous one seized him in both knees and in both feet, so that he could not leave his bed. On the night of his attack he entreated his wife to give him some colchicum to relieve his pain; but she, knowing the opinion entertained of his management of himself, and seeing the ill effects of it, persistently refused. In the morning I was sent for, and found the patient complaining loudly of the pain he endured; and he earnestly entreated me to give him some colchicum. I proved as obdurate as his wife had been; but I assured him that if he would only exercise a little patience I would relieve him; and that if he would follow my directions, and allow me to treat him as I thought right, *I would insure him from another fit of gout for a year.* The latter argument prevailed. I unloaded his liver and bowels, gave him a full dose of Battley's solution of opium afterwards,

which he occasionally repeated, and prescribed a mixture containing liq. ammon. acetatis, etc., of which he took a dose every six hours. It took six weeks thoroughly to relieve his system of the gouty element, but he was then able to walk better than he had done for a long time, and my prediction was verified, as he did not have another fit of gout for a year. I believe he may be said to owe his present fair state of health to his yielding to this treatment, as he has lost a look of premature decrepitude which was fast bringing him to have the appearance of extreme old age. This circumstance occurred ten years ago.

Making allowance for the difference of time between the process of *shortening* an attack of gout by colchicum and that of *curing* it by the employment of opium and other remedies, the results that will be observable are as follows:—the patient who has been treated with colchicum will perhaps loose his pain more speedily but the weakness of his joints will have been greatly augmented—and this in an increased degree after each attack. The tophi, or chalky deposits in his joints, may be largely added to, or if not already formed will be so. His muscular structure will feel unstrung, and he will present the appearance of being more or less shrunk in size. His face will be pallid, which in ignorance may be attributed to his confinement to the house, but which arises in reality from the deterioration his blood has undergone in the diminution of its fibrin and red corpuscles. His digestive powers will have been weakened, and his mental and bodily activity impaired, and he will feel as if he had gone through an exhausting fever. On the other hand, a man who has passed through a fit of gout without colchicum often asserts that he feels better than he had done for a long time previously. There is seldom much muscular weakness, and what there is soon vanishes on exposure to the air, and on return to ordinary exercise. The patient emerges from his attack with comparatively slight impairment of his digestive functions, and his mental faculties are rather improved than deteriorated.

It is perhaps desirable to add that we sometimes meet with individuals who have been subject to gout for many years, and who have habitually relied upon colchicum for its cure, no other drug appearing to exercise any influence in assuaging their suffering. Such persons are usually intolerant of pain, and are indisposed to submit to any prolongation of their discomfort when their experience has taught them how to lessen it. They are therefore unwilling to resort to any remedies but the one to which they have clung so long. I have met with some instances of this kind in which the patients have reached an advanced age; but the number of those who have done so is small, and they have always considered themselves, and have been, more or less invalids. Such persons have originally possessed very powerful frames, and have been remarkable in their youth for great activity. Their mode of treating themselves, when not undergoing a gouty attack, has been generous—living freely and indulging in stimulants without which they could not exist—usually abandoning wine and drinking spirits. Judging from the *physique* of some of them that I have known, their space of life might have extended to its extremest limits if they had adopted a different plan of treatment. Persons of this class have usually preferred to be their own physicians when suffering from gout. They have learned the art of relieving themselves from pain; and their idea has been that this was all that was necessary for the cure of gout.

There is another remedy; sulphur, which has long had the reputation of being serviceable in rheumatism, although in pure gout its virtues have not been recognized. When, however, gout or rheumatic gout has become chronic, sulphur, kept constantly applied to the affected joints, is frequently most valuable in its effects. The mode of applying it is to place an ounce of the flour of sulphur in a square bag of glazed muslin of rather larger dimensions than the joint requires, and this bag is to be quilted over so as to keep the sulphur evenly distributed over its internal surface. A tape is to be sewn at each corner of the bag, so that

it may be tied around the joint. When applied, it is to be covered with a piece of flannel, and worn night and day, the sulphur being renewed once a week.

I have seen many instances in which this application has proved of great service in restoring the joints to a healthy state, after they had been for a lengthened period incapable of proper motion. In those cases, of course, there was no change of structure in the affected joints. I will mention two of them as examples.

A nobleman whose father and mother both died from the effects of gout, had himself escaped the disease by taking every day a large amount of exercise in walking. He enjoyed good health until he reached his forty-fifth year. He then had a fall from his horse, and injured his right knee. He was laid up for a year, at the end of which time he recovered the perfect use of his joint. Twenty years after this, he was suddenly seized with severe pain in the knee which had formerly been injured, and he was rendered incapable of taking his usual exercise. Several remedies were had recourse to, but they did him no good. It was suggested that he should have the opinion of one of our most celebrated surgeons. This gentleman looked upon the lameness as the result of a slow process of ulceration of the cartilages of the knee, and enjoined rest, and warm douche bathing twice a day. This plan was carried out for a month but the joint remained unaffected by the treatment.

I now recommended the use of sulphur in the manner described. In three weeks from the time of beginning to use it the knee had regained its natural condition, and the patient was able to walk as well as he had formerly done. There had been very little difference in the size of the two knees, nor was there any great heat or redness in the one affected. The disorder was probably chronic rheumatic gout, as the patient had most of the symptoms connected with the gouty diathesis.

The next case is that of a gentleman aged sixty-seven, who had been a martyr to the gout for twenty-five years. When I first saw him, February 13, 1868, he was so feeble, and his legs were so useless to him,

that it required three persons to carry him from his bed to a chair. He had not been able to walk for fifteen months. Both his knees were much swelled, and painful to the touch; they also presented an hydropic appearance, and felt as if pieces of loose cartilage were floating in the relaxed cellular tissue. His hands and feet were greatly distorted by tophaceous deposits. His pulse was quick, and he was feverish; he had no relish for food, and his tongue was slightly covered with a brownish yellow fur. His urine was turbid, from an excess of lithates.

He was ordered to apply the sulphur to both knees in the manner described, and to take twice daily a dose of saline effervescing mixture, composed of the compound infusion of orange peel, iodide of potassium, chloric ether, and tincture of cardamoms, and two pills containing four grains of grey powder, four of Dover's powder, and three of the compound rhubarb pill, every night. On the 20th he was better in all respects. He had moved himself from the chair to the sofa twice during the week, a feat he had been unable to perform since the preceding May. The knees were diminished in size, and felt firmer to the touch. He was ordered to take his pills on the alternate nights, to continue his mixture, and to renew the sulphur every week. On the 27th the improvement continued; the pulse was stronger, but too rapid; the tongue on left side quite clean, but streaked with brown on the right. He had been able to walk across the drawing-room by holding his nurse's arm. The appetite was greatly improved, and the knees were reduced to their normal size. The treatment was continued. By the 5th of March he could walk with but trifling effort, and was in every respect better—the urine clear, and the appetite good. In a fortnight from this time he was able to walk unassisted.

Among many other remedies the use of lemon-juice has been greatly lauded in cases of gout and rheumatism; and in certain cases it is invaluable when taken in moderation. Moreover, when mixed with water and sugar, it may be said to be the best beverage,

to allay the feeling of craving for alcoholic drinks which is sometimes experienced, when it is required to lay aside their use.

The amount of lemon juice that has been taken in one day for the cure of rheumatism would scarcely be credited. A gentleman of good faith assured me that he took every day for weeks the juice of seventy lemons, and that he thus cured his rheumatism. When the use of this has been long continued I have noticed a peculiar effect produced on the finger nails, which have totally lost their natural appearance, and have resembled pieces of hardened putty adherent to the ends of the fingers.

The beneficial effects of lemon-juice may be most certainly obtained when it is taken daily in a moderate quantity. It may be drunk as an ordinary beverage, or the juice of one lemon may be taken in a little water once a day, on a comparatively empty stomach.

A gentleman, aged forty, whom I know, was some years ago the greatest sufferer from gout I have ever seen, his hands and feet being covered with large tophaceous deposits. He attributes his present freedom from gout—now of some years' duration—entirely to taking only the juice of one lemon in a quarter of a pint of water every day at the same hour. Since he commenced this practice an enormous quantity of urate of soda has exuded from his elbows, fingers, and toes. He assists this operation by the application of wet lint covered with oiled silk.

The acid is ordinarily most grateful to the patient. It stimulates the stomach and improves digestion, and by its antiseptic action on the blood, conduces to the improvement of the general health. It diminishes flatulency, and acts moderately as a diuretic. Perhaps one of its chief merits is the rapidity with which it is absorbed into the system, and that it does not interfere with the action of alkaline remedies when they also are required.

We meet, however, with many instances of persons who have never had a fit of gout, but whose lives are rendered miserable by feelings and sensations of pain

and discomfort, which are dependent on a gouty description of blood. The enumeration of the symptoms of such persons would comprise a small host "of the ills that flesh is heir to." Giddiness, pains in the head, with various noises in the ear, numbness of one or both of the hands, flying and darting pains in the limbs, lowness of spirits—hypochondriasis—sleeplessness, palpitation of the heart, etc., combined with the ever varying symptoms of dyspepsia and defective digestion to which these morbid sensations may primarily be ascribed.

Dr. Russell Reynolds read a very suggestive paper on this subject in the Section of Medicine at the Annual Meeting of the British Medical Association in Manchester, August, 1877; in which, after enumerating the various remedies that have been employed without success for the relief of these morbid symptoms, he concludes by recommending colchicum as the true antidote for them. Dr. Reynolds says, "When a simple treatment, such as I have suggested (the administration of colchicum,) is adopted, and all the troubles disappear with a rapidity that seems quite magical, it reminds one of that beautiful process of cleaning a photographic picture by cyanide of potassium."

In skilled and careful hands the use of colchicum for the alleviation of such sufferings is doubtless often most efficacious, but Dr. Reynolds's glowing description of the effects of the remedy might induce others, not equally gifted, to run its employment too hard, and to play too recklessly with so sharp an instrument, to the detriment of their patients.

To rely upon colchicum *alone* for the removal of the symptoms described above does not accord with my experience as being safe practice, however speedy may be the result it affords.

If the observations I have made as to the peculiar effects of colchicum on the blood, on the red globules more especially, are correct, which are recorded at page 176,—and which I have had no reason to alter since the first edition of this book appeared—I venture to think it would be advisable, when recommending the

employment of this drug, to suggest the desirableness of giving at the same time other medicines, such as steel, and quinine, to act as antidotes in preventing the deterioration of the blood which would otherwise occur.

Perhaps the hardest to bear, and the most intractable to treat, of all the different phases of disease which arise from the gouty diathesis, is hypochondriasis—or lowness of spirits. Here there is a never ceasing gloomy despondency surrounding the patient; he sees everything through a dark medium—life becomes a burden to him, and in the severer forms of the malady he longs for death. It would be most interesting and important if we could ascertain how many of the cases of suicide which occur annually owe their origin to a morbid description of blood of a gouty nature circulating through the brain. That such instances might be found I entertain no doubt, for I have seen both men and women who have hesitated on the verge of self-destruction from cerebral excitement arising from this cause, and who have regained their mental and bodily health on the removal of the *causa morbi*. Sometimes the occurrence of a fit of gout will entirely remove all previous sensations of mental depression. An accident, attended with loss of blood, has produced a similar effect, as well as the formation of a large abscess, without any assignable cause.

An instance of the latter kind has come under my notice recently. A gentleman aged fifty-four, possessing the gouty diathesis, but never having had a fit of gout, was in his earlier life in the habit of living freely. Sixteen years ago he lost his smell and taste. Years after this event he had an attack of rheumatic fever, on his recovery from which he found he had regained his two lost senses. Their integrity continued for a year, when he lost them again. In the month of May, 1877, he consulted me for “lowness of spirits,” for which he had sought the advice of many other physicians. He complained of nothing else. He said he ate well, slept well, and was able to take daily exercise, but his mental despondency—for which he could assign no cause—was

almost unbearable to him. I could detect nothing whatever wrong in him. After prescribing for him for some few weeks, I recommended him to go to Buxton, believing that if it was latent gout he was suffering from, the air and waters of that place might prove of service to him. When he had been there for three weeks he was one day seized with an intense burning pain on the outside of his right leg, three inches above the ankle bone. He at once resolved to return to London, feeling certain, as he said, that "he was going to be laid up." On examining the painful spot, the skin looked harsh and dry, and felt boggy to the touch. He informed me that he had had that spot there for twenty-eight years, and had never suffered any inconvenience from it. It was the size of a shilling, nothing more than a dry eczematous patch. The pain and inflammation increased until a large abscess formed beneath the skin, and ultimately discharged an enormous amount of bloody sanious matter. Directly this discharge took place, his natural good spirits and cheerful disposition returned; and he bore the confinement necessary for the healing of his abscess without a murmur.

Hypochondriasis is occasionally complicated with mental delusions. In a case of this kind, a gentleman who had been long ill with entire loss of appetite, coupled with extreme depression, fancied that the cornice around the ceiling of his bed-room was composed of dead rams' heads. No reasoning had any effect in changing his belief. At last, after sundry doses of blue pill, he observed that he noticed a break in the cornice, and day by day these breaks increased, until at last only one solitary head remained, which he cheerfully declared he was hungry enough to eat. In this instance the evidence of hepatic derangement pointed to the treatment necessary for a restoration to health. It would prove fortunate for many if this obscure and hidden agency (derangement of liver) were earlier recognised as the cause of bodily and mental derangement.

CHAPTER VIII.

PREVENTION.

FROM what has been said in the foregoing chapters, it will have been gathered that the prevention of gout is a matter fully within the power of the great majority of those threatened by the disease, and of very many amongst those who have been actual or even severe sufferers from its attacks. The precise course to be pursued in any single instance must always be determined by a careful study of personal peculiarities and habits; but the guiding principles to be borne in mind must in all cases be the same. The amount of muscular work done, the amount and quality of blood formation, the regular distribution of this fluid to the several parts and organs of the body, and the regular and sufficient removal of excrementitious matters from the system, are four chief factors of health which are mutually inter-dependent, and no one of which can be materially altered without the production of secondary change in the rest. It is by such habits of life, in regard especially to food, brain work, exercise, and sleep, as will preserve a due balance, symmetry, or harmony between these four factors, that gout and analogous diseases may be kept at bay. There is no especial charm or secret in a very active life or in a moderately sedentary one; but the disadvantage of the latter is that the sedentary man does not in all other respects regulate his mode of living in a way to suit the general quietude of his habits. Muscular exercise promotes circulation and secretion, and enables those who practice it to commit with impunity indiscretions from which others would suffer. It is far easier to

take much exercise than to exercise much self-denial ; and hence, and hence only, it is easier for the active man to avoid gout than for the quiet one.

I lay great stress upon this point, because, while an abundance of exercise is justly regarded as the natural, and in some senses as the best preventive against gout, it is absolutely beyond the reach of many of the greatest sufferers from the disease. A man possesses but a certain and limited amount of vital force for his day's work, and he cannot consume this force in opposite directions. If he be engaged in duties, or subject to responsibilities, which tax his mental energies to their full measure, and call upon his brain for constant exertion, he cannot take much physical exercise. To do so would entail an amount of bodily fatigue which would practically disable him for the discharge of his duties. A man who was physically tired could not do the brain work of a judge, or an advocate, or a statesman, or a physician ; and the snare of such men is, that, while their time is fully occupied, and their muscles almost in repose, the amount of nervous waste that they undergo creates a craving for a large quantity of food, and they are apt to take this chiefly at a single meal. By doing so they overtax the digestive and assimilative power of the system, and load the blood with impurities. By pursuing an opposite method, and by taking a sufficiency of food, divided between several meals, they preserve the necessary balance of their several functions. The reason why a fit of gout, when properly treated, is often a source of subsequent relief to a patient who has previously been suffering from the sensations of discomfort which are so well conveyed by the French word *malaise*, is mainly the diminished pressure in the circulating system that results from the administration of depurating medicines, and from the requisite abstinence enjoined throughout the attack.

In all instances of gouty seizure one prevailing condition exists in more or less intensity, and that is congestion of the hepatic system. In whatever manner this plethora is relieved, whether by starvation,

dilution, or the action of medicines, when the proper function of the liver is re-established the gout will disappear. It may leave some of its consequences behind it, as the joints and other parts of the body testify ; but this amount very much depends upon the kind of treatment to which the patient has been subjected. The natural tendency of a fit of gout is to cure itself, but there are only a few persons who will submit to the painful process by which nature slowly effects a restoration to health, or who will confine themselves to the use of those simple eliminating medicines that will, if steadily employed, ultimately restore them to a better state of health than they experienced previous to the accession of the malady.

This important fact is generally disregarded—that in proportion to the length of time that the causes of a disease have existed in the constitution so much the greater will be the difficulty of removing them.

The pain resulting from the inflammation of gout is often so acute, amounting in some instances to positive torture, that relief is earnestly sought for the alleviation of the suffering, and all future consequences are disregarded for the sake of present ease. When this is the case, the soothing influence of *colchicum* is most energetically displayed, and the patient is only too grateful for the prompt relief that is afforded him when this medicine has been prescribed.

The repeated attacks of gout from which those suffer in whom the disease has become habitual, may be traced to two predominating causes, the first of which is an impaired digestive function, either attributable to having inherited a weak stomach from a gouty parent, or produced by indulgence in luxurious and injudicious habits, and by a defiance of the laws that govern health. A larger amount of food and stimulants may be consumed than the stomach can digest or the system demands; and this redundant nutriment, not being carried off by the natural channels, becomes a cause of those chemical changes in the blood and the secretions which invariably, for a longer or shorter time precede a gouty paroxysm.

When food in excess or of an unsuitable kind is taken into the stomach, and is neither properly digested nor assimilated, an excess of acidity is the result, and a crude and acrid description of blood is formed, which acts more or less as a poison throughout the whole system. The heart and lungs become impeded in their action, and the circulation and respiration become oppressed. This state of discomfort creates a strong disinclination to resort to exercise of any kind; and imperfect oxygenation and decarbonization of the blood and tissues follow as a matter of course. The brain also suffers from the inertia occasioned by an impure description of blood, less in its intellectual functions, in the earlier period of the disease, than in its animal attributes. The will becomes enfeebled, and nothing is more grateful to the patient than repose and freedom from exertion.

When the blood of this impure nature has once been formed, it may be described as maintaining a perpetual ferment in the system; for as the blood is the element for which the gastric juice is formed for the purpose of digestion, this important secretion, when derived from an imperfect blood, cannot be otherwise than inert and impure, and deficient in the solvent property. So long, therefore, as blood of this nature pervades the system, it is hopeless to expect a restoration to health; which can only be obtained by a patient who will consent to alter the mode of life that has contributed to the development of his disease.

It is maintained by Gaspard, Fontana, and others, that many poisons which affect the blood seek their exit through the liver; and the opinion chiefly rests upon the evident derangement which occurs in this gland at the onset of blood-poisoning, and which is shown by bilious vomiting, yellowness of skin and other hepatic symptoms. There can be no doubt that, in such cases, these symptoms point to the liver as the organ primarily affected, or that its influence subsequently extends, more or less, to the whole glandular system of the body. The bile, instead of following its natural course, flows into the stomach, from whence it

is partly vomited and partly absorbed into the blood, thus producing yellowness of the skin. Being itself derived from impure blood, such bile operates as an additional poison, or at best no longer fulfils its proper functions in the economy, so that constipation and other ills are produced. The severity of the conditions thus arising must depend, of course, to a great extent at least, upon the virulence of the poison which occasions them; and hence will furnish, in the exanthemata, in gout and in typhoid fever, a valuable clue to the probable severity of the attack. One of the most marked forms of blood-poisoning is that which can be traced to some kind of direct inoculation, as from putrid game, the subject in dissecting, and other similar sources. The hepatic symptoms above described are then displayed in their most severe form; and a large experience of such cases has shown me the necessity of at once unloading the liver, which is invariably more or less paralysed, and of maintaining its activity by the continued use of moderate doses of calomel. At the same time, the strength should be supported by quinine and sulphate of iron, together with the most highly nutritive diet, of a digestible kind, which can be taken. By the adoption of this plan, suppuration, and the train of evils liable to be produced by it, may often be prevented.

A second cause that is powerfully instrumental in favouring a succession of gouty attacks, is the use of colchicum for their cure or alleviation. I have already shown that this powerful hermodactyl appears to exert a primary effect on the blood globule; and its secondary effect may with equal truth be said to be the impairment of the digestive function of the stomach, by which it plants, so to speak, the seeds of a recurrence of the malady. It is rare, indeed, to meet with a person who suffers from gout month after month and year after year, excepting among those who have been victims to their blind devotion to this insidious medicine. Its immediate action being to allay pain, it may have been resorted to on every fresh accession of the disease, until, after a time, it ceased to exercise its former

soothing influence. The blood of the patient has become in time so attenuated, and so devoid of fibrin and the red globule, that nothing is left upon which the drug can exert its especial action. The repeated use of colchicum has also appeared to me to encourage the deposit of chalk stones, an effect not difficult of explanation when we reflect that the medicine is a palliative and not a curative remedy, and that it allows the immediate cause of the disease, the urate of soda, to remain undisturbed in the system. This observation will be most frequently verified in those persons who possess a relaxed condition of muscular fibre.

Most writers upon gout agrée in the main respecting the means to be taken for its prevention, and as to the importance of two cardinal rules; namely, moderation in eating and drinking, and regular exercise.

In reference to the first of these rules, it is not desirable that a person should so limit his amount of food as to bring himself to a verge of starvation; for by doing this, although he may possibly keep gout in obedience, he will entail upon himself other maladies which are at least equally undesirable. The old saying that a man is either a fool or his own physician at forty, contains just the germ of truth that most men who have arrived at that age are tolerably familiar with what agrees or disagrees with them; and if they are wise, they treat themselves accordingly. It is, however, far more easy to avoid particular articles of diet, which experience has proved to produce an amount of discomfort greatly disproportionate to the transitory pleasure of eating them, than to avoid partaking of an excess of food of any description that does not manifestly disagree. It is the long-continued practice of eating more than the wants of the system require (a practice often due to the consumption of an undiminished amount of food after the active habits of youth have been abandoned), that most frequently entails upon the individual consequences involving gout and other diseases. It is on this point that the intelligence and self-examination of a patient may be brought to bear, in order to determine whether a certain amount of self-denial would not enable him so

to diminish his daily amount of food, as to render him less liable to the evils consequent upon repletion. The question is always one of much importance, and is one on which no conclusion should be hastily or rashly formed, or should be acted upon without great caution and circumspection.

The consequences of *over*-abstemiousness are as serious as those that result from repletion, and they are not always to be so easily remedied as the latter. It will generally be found that a patient will more readily yield to advice in refraining from his accustomed amount of stimulus, than in diminishing the quantity of food that he consumes. The fact is that the stomach after having been accustomed to a certain amount of distension, acquires a proportionate size; and unless it be filled as usual, a feeling of emptiness is experienced, which occasions much discomfort to the individual. This feeling, however, may be gradually overcome by eating more slowly, and by endeavouring to rise from the table with an appetite not *quite* satiated. I have been assured by many persons who have attained a vigorous old age, that they always left off eating with an appetite that would have enabled them to consume more food; and that a transitory feeling of chilliness has succeeded to their meals.

It is quite impossible to lay down any fixed rules which would be alike applicable to all persons, either as to the quantity or quality of the food they should consume; but it is in the power of every one to study the peculiarities of his own constitution, and by careful experiment to determine the mode of life which is most conducive to his health and welfare. Observation has taught us that gouty stomachs cannot ordinarily bear long fasting, and that it is better to diminish the intervals between food, and to lessen the quantity taken at one time, than to rely upon two chief meals, as is the common custom in the present day. The cravings of hunger are not readily satisfied when many hours have elapsed since the previous meal; and the consequence is that a larger amount of food and drink is consumed than the stomach is capable of digesting. This error

is avoided when recourse is had to an interim meal to blunt the sharpness of the appetite.

Men engaged in professional and commercial pursuits are frequent sufferers from gout; and, as has been already stated, the cause of it may in numerous instances be traced to this particular error on their part. They will make what is termed a good breakfast, eat no luncheon, excepting perhaps a biscuit and a glass of sherry, and will imagine that they have treated themselves judiciously by not partaking of a meal in the middle of the day. When dinner-time arrives they are either ravenously hungry, or their appetites are squeamish from too long fasting; for it cannot be supposed that a glass of sherry and a biscuit contains sufficient pabulum to enable the brain and nervous system to withstand the excitement and wear and tear of close application to business for many hours. The plan I have advised, and which in many instances has proved advantageous, is to take a light breakfast instead of a "good" one, and a mutton chop or some other digestible solid in the middle of the day. Thus, when the time arrives for taking the chief meal, the stomach is not enervated by too long a fast, nor does the individual require an excess of food or stimulants to supply the craving formerly experienced. There are numerous instances on record of individuals who have enjoyed good health throughout a long life by abstinence and a frugal system of living. The one best known, and most frequently quoted is that of Louis Cornaro, who, when in the middle period of his existence, appeared to be fast verging to the grave, but who, by a careful management of himself, attained a healthy green old age, living to nearly one hundred. Dr. Gairdner mentions the late Dr. Gregory, of Edinburgh, a man of no ordinary capacity, who was struck by the very serious sufferings he had witnessed among his relations, and who resolved, at an early period of life, to subdue the tendency to gout in himself. He adhered rigidly to a frugal diet, with much bodily exercise, and attained his object of being the first individual of his family who lived and died free from gout. There are also many cases of celebrated persons who,

notwithstanding that gout still clung to them, were able to attain great longevity, and to exercise to the full their powers of intellect, by living a frugal and careful life, and by carrying out a system of daily exercise. One of the most recent and most remarkable instances of this kind was that of the late Lord Palmerston, who was a sufferer from gout, but who lived to between eighty and ninety years of age, and to the last was capable of attending to his duties in the House of Commons. He was very temperate both in eating and drinking, and not only made a practice of taking horse exercise daily, but the year before his death rode from London to Epsom and back. A humorous anecdote was told of this nobleman, to the effect that a member of the House of Commons, who lived in the direction of Lord Palmerston's house, walked home with him, after a long sitting at an early hour of the morning. On arriving at Cambridge House, Lord Palmerston invited his friend to join him at supper, an invitation he willingly accepted, having fasted long. On entering, the servant was desired to bring in supper for two. This order was obeyed, the meal consisting of two crusts of bread and two tumblers of water. An instance such as this is better than a volume of directions with regard to the means for preventing or lessening the evils of a disease like gout, for it exemplifies the two chief rules, moderation and exercise, carried out in a practical way. It is also worthy of remark that Lord Palmerston attached great importance to obtaining sufficient sleep; and that, after a late sitting of the House, he never suffered himself to be disturbed, on any pretext whatever, until he had been in bed for a certain number of hours.

If we come down from these general principles to the consideration of points of detail, and of the kinds of food best suited to the gouty, we shall find that, as a rule, delicate eating is desirable. It is told of the famous Quin, that when he was once presented to a lady, who said she had heard of him as a great epicure, he replied, "You are mistaken, madam; I am only a great glutton." The distinction is a perfectly sound one; but the weak point of epicurism, as regards health, is

its tendency to promote gluttony. A person with feeble digestion, if only he will resist being tempted by delicacies to exceed in quantity, and if he will avoid dishes that are very rich, will find it far more wholesome to dine upon *entrées* and game than upon joints, and to adopt French cookery in the place of English.* To feed coarsely upon underdone lumps of beef and mutton, and to call this "plain, wholesome living," is an outrage upon common sense of the grossest description. The living is plain enough; but its chief claim to wholesomeness is that men with the digestion of day-labourers can consume it with impunity. Those who are not so gifted, and to whom an English "plain dinner" brings untold tortures of dyspepsia, will find that they can eat a well-prepared French dinner with entire comfort, both present and prospective. The difference depends in great measure upon more thorough cooking, by which the labour of the stomach is materially lightened; but also, in some degree, upon judicious seasoning, and a greater variety of food. The raw material is often inferior, at least in France itself, where the cultivation of the art of cookery seems to have been at least partly due to the badness of the meat. In England, of course, this does not apply, and French genius, with English materials, produces dishes that can only be equalled in Japan, even if there. In that strange country, where some of the highest civilization the world has ever witnessed is still struggling with the relics of barbarism, the art of dining is said to have reached absolute perfection, and to be practised with a refinement unknown to Western nations.

When the digestion is feeble, and the appetite not large, the ordinary French dinner will be found to afford a very good average proportion of animal and

* A friend has furnished me with the following epigram:—

"The French have taste in all they do,
While we must go without:
Nature to them has given *goût* !
To us she's given gout!"

vegetable food. In cases of a different kind, when the digestion is good, and when a capacious stomach feels the need of being filled, it will be found most judicious to eat sparingly of meat, and to let the bulk of the meal consist of vegetable matter. The ingenious hypothesis of Liebig about the distinction and uses of different kinds of food have not stood the test of modern research, and the questions underlying them involve too many matters of physiology to be satisfactorily settled by a chemist alone. Twenty years ago, the precise application of nitrogenous and non-nitrogenous aliment was thought to be well-nigh determined; but now, like Molière's physician, "*nous avons changé tout cela.*" It may be regarded as certain that a diet almost entirely vegetable is capable of sustaining in the highest vigour the physical powers of man; but it is doubtful, and it has been rendered more doubtful by the acts and writings of vegetarians, whether it is in the same degree capable of sustaining mental vigour. The "hammals" or porters of Constantinople, who carry burdens that the strong men of other countries could scarcely sustain, live entirely on rice, black bread, a little fat, and an occasional dram of strong coffee. The function of the birds and beasts which convert vegetable matter into flesh for our consumption seems to be little more than to lighten the labour of our stomachs, by affording them food that is less bulky, and that requires a smaller amount of conversion. The Connaught peasant knew no want, and had abundance of blood and muscle, when he lived absolutely upon "praties;" but it was necessary for him to consume, on an average, twenty pounds weight a day; and he acquired from habitual distension, an abdomen like that of a gorilla. Persons whose diet is limited to vegetables and the farinacea are rarely troubled with gout. To the aforesaid Irish peasant, the Hindoo, and other Orientals, and to the class of persons styling themselves vegetarians, the disease is almost unknown; and this important fact may in certain cases be turned to profitable account by those who possess the gouty diathesis, and who are bound to consume at least a certain quantity. A milk diet,

combined with flour, in the form of maccaroni or vermicelli, will also supply ample nutriment to the system, and will have little tendency to the excessive production of urea and its compounds, which are the exciting causes, not only of gout, but of many other morbid conditions. An illustration of the poisonous effects of an excess of urea is to be found amongst the other horrors attendant on the great French Revolution of 1789.

The person to whom was entrusted the charge of the manufactory of Gobelin tapestry, had learned by experience that no mordant was so effectual as highly concentrated human urine in fixing the varied colours in the materials which were employed. The manufactory belonged to the Government, and the managers had sufficient influence with those in power to induce them to give to certain individuals who had been condemned to death, a promise that their lives should be spared, provided they would consent to live entirely on meat, and to abstain from all liquid, for one week. Six persons were selected for this experiment, and before the end of the week five of them were dead, and the sixth survived only a few days longer.

Among special articles of diet, those concerning which questions most frequently arise are unquestionably sugar and alcohol; and the admirable and instructive Lumleian Lectures recently delivered by Dr. A. B. Garrod at the Royal College of Physicians, "On uric acid: its physiology and its relation to renal calculi and gravel," contains some most interesting observations with regard to them. In speaking of sugar, Dr. Garrod says:—"The most common of the non-nitrogenised and principles contained in food is starch, seeing that it forms 70 per cent. of wheaten flour, and almost the whole of many of the simple amylaceous articles of food, as rice, maize, arrowroot, sago, etc., also of the potato, turnip, carrot, and so on, when these latter are dried. It can be shown that when taken into the alimentary canal, starch is soon changed into glucose sugar by the action of the saliva and pancreatic juices; and when cane sugar is taken,

the same change ensues, so that however carefully sugar is avoided as an article of food, it is still abundantly formed in the canal when amylaceous matters are eaten, and the result is the same whether a pound of starch in any of its dietetic forms or a pound of cane sugar be taken."

"There is a very popular idea that sugar causes what is termed acidity, and hence it is scrupulously avoided by many. Is this true? Between two or three years ago I was much struck at seeing an American Surgeon of great repute putting lump after lump of white sugar into his tea, and I asked him why he did so. He told me that in the States it is a common habit to take sugar thus as a preventive of heartburn, and that he took it for that purpose. His answer made a strong impression on my mind, and since then I have often questioned dyspeptic patients as to their experience on this point. At first nearly all exclaim, "of course sugar causes acidity," but as yet I have failed to find anyone who could answer me, from personal experience, that the eating of lumps of ordinary white sugar produces more so called acidity than taking any other article of diet. It must be borne in mind that I do not for a moment include sweetened fruits, and such like substances, in the same category as simple sugar. One can hardly believe that the eating of a lump of cane sugar would seriously add to the glucose which is daily produced in the alimentary canal of an individual living on an ordinary mixed diet. Let us see what has been found experimentally with regard to the influence of sugar on the production of uric acid. Böcker says that the effect on man is to lessen the quantity of that principle, and Bischoff and Voit have proved that, in dogs, starch produces the same effect on the urinary secretion as sugar, so I think we may say that there is no increase in the uric acid when sugar is taken."

I think society at large owes a debt of gratitude to Dr. Garrod for enunciating his opinions as to the safety of indulging in sugar; and for his attempt at removing the stigma attached to it as being "a prevailing cause of the production of acidity." It is not begging the

question to suggest that the prevalence of saccharine matter in fruits and vegetable's indicates its importance as a valuable as well as an agreeable addition to our diet. Children, from their earliest infancy, do not require to be *educated* to eat sugar; nature has largely supplied this element of nutrition in the mothers' milk; and it may be fairly asked, considering how many mothers in the higher circles are unable to nurse their children, whether their want of milk may not be owing to the absurd fashion of abstaining from sugar? We all know that the immediate effect of putting any sweet substance into the mouth is to produce a copious flow of saliva, which at once acts as a lubricant to the mucus membrane. There is no doubt that sugar acts on the glands contained in the body as well as on the parotids, and so conduces to the healthy performance of their functions.

I have always opposed the unnatural system, which has become so common, of abstaining from sugar. Many persons have so habituated themselves to this abstinence that, when remonstrated with, they declare that "they cannot endure it." I have often noticed the difference of complexion in members of the same family where some have abstained from sugar, and others have not. Those who have indulged in eating it have generally the best complexions, the others being defective as regards the purity of the skin. This is not surprising. Whatever form of diet conduces to the healthy action of the mucus membrane—and nothing does this more than a moderate use of sugar—must influence the skin. The mucus membrane has been termed the analogue to the external skin, and whatever maintains the former in a healthy state will exercise a powerful influence on the latter. I am satisfied that I have traced to abstinence from sugar, some of the most painful and obstinate affections of the skin.

I have never observed any ill effects in those gouty patients who have made it a practice to take sugar freely. On the contrary one would say that if eating sugar arrests heartburn, a common affection in gouty stomachs to which Dr. Garrod alludes, it ought to be beneficial

rather than otherwise. Spanish liquorice has long been a remedy for heartburn, and the extract contains a large amount of saccharine matter.

Passing on to the subject of alcohol, Dr. Garrod says, "The influence of different alcoholic beverages on the production of uric gravel and renal calculi we must remember that all such beverages contain alcohol united with different proportions of water, some little more than this; others, however, contain sugar together with colouring and so-called extractive matter, also salts of potash and lime united with vegetable or mineral acids. Many wines also contain a certain amount of some free organic acid. Now, have we any facts with regard to the special effects of different wines in the diseases which we are now considering? I think we have many, and much information which we can use to guide us in the prevention of such diseases. It may, as I believe, be confidently asserted with respect to gout, that, with an absence of alcohol in any shape, coupled with an absence of hereditary predisposition derived from alcohol drinking ancestors, the disease would be practically unknown."

"When, however, we investigate the influence of wines we shall find a different result. Drinkers of the common light wines, such as the red Bordeaux and the Rhine wine, suffer but little, while among the same nations, those who indulge freely in beer are by no means free. The natural light wines, in which the alcohol is small in amount, while there is an almost complete absence of unfermented matters, which contain, also, a considerable quantity of acid vegetable salts, are little liable either to produce gout or to lead to the formation of calculus or gravel. On the other hand, the Peninsular wines and those which resemble them, which are stronger in alcohol, contain much unfermented matter, and are almost devoid of the vegetable salts, have great gout producing powers, and lead readily to a condition of urine favourable to the production of gravel and calculi."

Dr. Garrod then adverts to malt liquors, ale, beer, stout and porter. He says, "from my own experience

I believe it is also the experience of all who have attended to the subject, I can confidently assert that these beverages have a great tendency to produce uric acid diathesis. Compare the hospitals of Edinburgh and Glasgow with those of London; in the former gout is scarcely known, in the latter this disease is common, the difference I believe being chiefly due to the different beverages drunk by the working classes of the two countries; it is in fact the difference between whisky and malt liquors."

Dr. Garrod then points to the importance of endeavouring to ascertain what principle or principles, present in some of these alcoholic beverages, absent from others, lead to the development of this diathesis or aggravate it when it is already manifested owing to hereditary or other causes. He says, "It cannot be the alcohol alone; this, I believe, can be fully and satisfactorily proved, seeing that large groups of people whose custom is to drink freely of distilled spirits are yet free; instances are to hand in Scotland, Sweden and Norway, and Poland. It cannot be the sugar alone; for although the partially fermented wines and malt liquors contain sugar, yet sugar added to distilled spirit does not appear to produce the uric acid diathesis. It cannot be the acidity alone; for the wines which are most harmless are quite as acid or even more so than malt liquors and the Peninsular wines, and many people who object to the least acidity in wines, will often take lemon juice to an extravagant extent. If, then, neither the alcohol, nor the sugar, nor the acidity by itself is the cause of certain beverages proving so injurious, is it a combination of any of these that does the harm? We already know that the combination of alcohol with sugar, and that of alcohol with acid salts are innocuous as far as the uric acid diathesis is concerned. What, then, is there left for us to fall back upon in explanation of the peculiar properties which some of these beverages possess, while others are devoid of them? The only conclusion I can arrive at with my present knowledge—and it is the result of much thought during many years—is that it is some-

thing which is the result of imperfect fermentation, and you will find that it is those beverages in which fermentation has commenced, and has been allowed to proceed to a certain extent and has then been checked, which, of a certainty cause gout, and probably lead also to the production of gravel and calculus. If I am asked to state more exactly what this principle is, I cannot do so: it may be an influence only, a condition of matter—a ferment.

There is no more frequent question put to medical men by their gouty and dyspeptic patients, when told “they must leave off wine,” “then what am I to drink?” The prevailing answer, in the present day is, “you may take either whisky or brandy in moderation with your meals.” It is true, that this advice is in many instances most judicious, when there is an excess of uric acid in the system, as spirits do not assist in the formation of this acid, provided the patient confines himself to a small quantity of the stimulant, and ceases to take it when the necessity no longer exists. But here lies the danger, unless the medical man has told his patient that he should relinquish drinking spirits when the symptoms for which he recommended them have disappeared, the practice is likely to be continued. The patient has been ordered to leave off wine and to drink spirits instead, he has experienced the advantage of following this advice, and in far too many instances the continuance of the practice has tended to produce disease of a more formidable character than gout. The patient comes to regard the spirit as an innocent dietetic beverage, and by almost insensible degrees acquires the habit of indulging in it with greater freedom than was ever contemplated by his medical adviser.

There can be no doubt that many persons who labour under the miseries attendant on a weak stomach—whose digestion is slow, and imperfectly performed, do find the advantage of taking a small quantity of pure alcohol—about half-an-ounce in two wine glasses of water with their luncheon and dinner; and this quantity should be the maximum if they wish to avoid the evil consequences of taking spirits in excess. The habit

is a seductive one, as no immediate ill effects are traceable to its influence. It is chiefly in the later periods of life that men begin to suffer from what they considered an innocent beverage. It is impossible that the daily use of a powerful stimulant can act otherwise than prejudicially on the whole of the glandular organs of the body. The long continued use of such an agent so affects them as to produce change of structure; and hence the observation of the late Sir Benjamin Brodie, "That it was rare for him to see a man over 60 that was not a sufferer from prostatic disease." The organ that is primarily affected by indulgence in spirits, is the liver, which fails to perform its depurating office for the blood. The kidneys then become overtasked to compensate for this failure of the liver; and receive materials which their organizations is unfitted to eliminate, a condition which ultimately tends to their disorganization. Prostatic disease is a more frequent occurrence from this cause, since, the prostate being a gland, it sympathises with the derangements of other glands of greater magnitude and importance.

Ardent spirits are frequently of great value in the treatment of disease, and for this purpose only should they be used. The judicious administration of a small quantity will often act as a restorative, and will prevent the occurrence of disease in organs which have suffered congestion from a chill or other causes. Such an influence is most marked when the patient has not been in the habit of taking them.

The only persons under my observation who have escaped injury from the practice of drinking spirits, are those who have had relaxed bowels. The carbon contained in the alcohol seems to have found an exit from the system by this channel. Dr. Garrod goes so far as to say, "It may, as I believe, be confidently asserted with respect to gout, that, with an absence of alcohol in any shape, coupled with an absence of hereditary predisposition derived from alcohol drinking ancestors, the disease would be practically unknown."

I quite agree with Dr. Garrod in this assertion, and a striking instance may be found at page 133 of this

book, where a gentleman of 70, who had been a sufferer from gout for 30 years, was free from it for 10 years, by leaving off all forms of alcohol. After this, only two slight attacks occurred between the age of 80 and that of 91, at which he died.

I have never found that persons have been relieved from gout by leaving off wine and drinking spirits instead; and I wish that Dr. Garrod had made public, on this point, the result of his great experience.

It is true that patients are placed in an awkward predicament when all forms of alcohol are forbidden them; and they will seldom feel satisfied by being told that properly made lemonade is the only drink which seems to answer as a substitute for alcoholic liquors, to those who possess a vigorous circulation. To such persons, who have to undergo a great deal of mental and physical exertion, this seems but a poor consolation, but if they would make up their minds to try the beverage they would find that they would do their work as easily and pleasantly as usual. The lemonade to which I refer is made with the juice of one large lemon or of two small ones, with a round of the peel cut very thin, added to a pint of boiling water and sugar, etc. to taste. Failing this, if they would mix a moderate amount of claret to the water, to be taken with their meals, the desire for a more powerful stimulant might be obviated.

The late Mr. Aston Key, who was celebrated as a Lithotomist went over to Frankfort to see the son of a friend of mine. When the medical officers of the chief hospital heard of his arrival, they requested him to deliver a lecture upon "Stone," informing him, that they had never had a case of that nature in their hospital. The inhabitants of Frankfort drink hock, as their common beverage; and their experience confirms the assertion of Dr. Garrod that drinking only light wines, as Rhenish or Bordeaux prevents the formation of gravel or calculi. Among the cider drinkers of Devonshire, too, stone is an exceedingly rare malady.

It would be very interesting to learn what is the prevailing type of disease which affects those whose chief beverage is hock, and to know whether they are as free from rheumatism as from gout, gravel and calculi.

There is one element which Dr. Garrod has overlooked and which favours the production of gout in this country, namely, the large consumption of animal food by the mass of its inhabitants. This, in combination with *improperly fermented liquors* is a fertile source of both gout and rheumatism. Where there is less consumption of animal food there is less gout. The powerful influence of confining the diet to animal food alone, is well illustrated by the already related experience of the Gobelin tapestry manufactory.

The question of how men should guide themselves with regard to the use or the avoidance of stimulating beverages is, no doubt, a highly important one. It is not to be expected that they will follow, in any great numbers, the advice given by total abstainers; for the need of some kind of stimulant has been experienced by mankind in all ages and countries, and seems to be an integral part of human nature. We may concede to the total abstainers that a large proportion of crime is connected, more or less directly, with alcoholic excess; but this consideration will not be likely to restrain those who have no temptations to crime, and who are not prone to excess, from taking a little wine or spirit as an antidote to the languor produced by fatigue, whether mental or bodily. A more useful recommendation than that of total abstinence would be to make a rule of never exceeding some specified quantity within a given time. By such a plan excess would be prevented, and the moderate wants of the system would be supplied. As it is, I have had many opportunities of observing how frequently the wearers of the "Blue Ribbon" have become inordinate consumers of tobacco, the only "comfort" left to them. The practice of smoking to excess is quite as pernicious as that of drinking to excess, and its consequences are equally fatal.

The diminished consumption of the stronger Peninsular wines, within the last few years, has been very remarkable. It may probably be explained, in some degree, by the greater popularity of the Bordeaux and Rhenish vintages, but still more by the modern medical practice of advising the use of whisky. When the public have had time to discover the injurious effects of the daily consumption of strong spirit, they will certainly revert to wine, and will incur the risk of drinking liquids so-called, which, if not procured from tradesmen of first respectability, are likely to be more or less spurious and unwholesome. These risks, be they greater or smaller, will be less than those of spirit drinking; and the safest plan, for all who are unable to procure wine of high class, is to dilute some of the more fortified vintages with water. Notwithstanding its bad reputation as a cause of gout, there is no more wholesome wine than genuine port, when it is well matured; and the chief fault which can be imputed to it is that of palatability, which renders people disposed to partake of it too liberally. If sherry or Madeira were taken in the same quantities, they also would be credited with being producers of gout. There is a common error that port wine should not be kept after being decanted, and that it is necessary to "finish the bottle." As a matter of fact, it will keep for several days in a decanter, and seems often to gain in softness by the change.

Another reason why port wine may sometimes be a cause of gout is that it is bottled too soon. It is strongly fortified with alcohol prior to importation, and its fermentation is checked, so that it will keep for many years. The large amount of crust in old bottled port clearly shows that the wine which yields it has not been kept in the wood long enough to throw down a quantity of acid salts, which are deposited the more readily in bulk. The wine merchant will allege that long keeping in wood will deprive the wine of two of its most valued qualities, colour and flavour. This may be disputed, but it does not admit of doubt that wines so treated are far more wholesome than those

which are bottled earlier. Two or three glasses daily of such wine will act as a grateful stimulant to the stomach, and will assist digestion; but a larger quantity will produce defective assimilation, and those who so exceed must not be surprised if they become the victims of gout. So long, however, as discretion is allowed to govern appetite—the moderate use of a generous wine is more likely to keep gout at bay than to occasion it. Another point to be considered is that those who drink port wine should be moderate in the use of animal food. Which should not be taken more than once a day. Fish, poultry, and game will be more readily digested by weak stomachs. There are some gouty persons who declare that port wine is a poison to them, and they are usually of a plethoric nature, and their gout is of the so-called “sthenic” kind. It is to the sufferers from the “asthenic” type that port wine is most serviceable.

If wine merchants would only turn their attention to the supply of wine kept in the wood as I have described, I have no doubt that port would again become a favourite beverage, to the great advantage of consumers. Such wine is to be procured by those who will take trouble about it, but it ought to be an ordinary article of commerce. I am assured that in Portugal the wine is invariably drawn and drank from the cask, and is never bottled. The growers hold that the deposit of crust is a defect, and they despise colour, since they regard its absence as the surest evidence of maturity.

Wine treated in this way has the great advantage of being allowed a longer period in which to undergo fermentation, and to deposit the various vegetable and mineral salts which, when retained, are more or less unwholesome.

Since the above was written, a gentleman reported to me the substance of a conversation which he had held with one of the chief Lisbon merchants, who said “that he was in the habit of drinking port wine as we drink beer,” and who ridiculed the idea that it produced gout, as he had never heard of an instance of any habitual port wine drinker suffering from the

disease. His opinion completely coincides with that which I have expressed, and shows the difference between a wine which has been thoroughly fermented, and deprived of all its originally noxious qualities, and one which still retains them.

The great improvement which has taken place during recent years, in the production of malt liquors, has added largely to the comfort and welfare of mankind. The amount of chemical knowledge displayed in preparing the finer kinds of ale has placed the producers of them in the ranks of men of science, and the term by which some of these ales are distinguished, as being "malt wine," is by no means an exaggerated description of them. It was the demand in India for a light kind of malt liquor which caused the brewers to manufacture the well-known bitter beer. I think I am right in mentioning Mr. Hodson's name as the originator of this article. The gratification of those who were able to indulge in this beverage—having no liver disease to contend against,—far exceeded that which could be obtained from any other kind of fermented liquor. It was to them a tonic as well as a stimulant. The extreme heat of the climates, by its action on the skin, would counteract the tendency to produce congestion, which is common to all malt liquors; and if taken in moderation its effects were most beneficial. To those who can drink malt liquor it is even in this temperate climate an agreeable substitute for wine, provided the ale chosen be of the kind known as "light and bitter."

The amount of alcohol contained in the strongest malt liquor is about 6 per cent. or perhaps a little more; but this is quite sufficient when the beverage is taken in moderation, more especially in the "bitter form," to prove a grateful aid to the stomach in the digestion of its food. The Bordeaux wines and light wines of the Continent, usually contain about 12 per cent. of alcohol, excepting Burgundy which exceeds this quantity by one or two per cent.

The Peninsular wines, as ordinary port and sherry contain 18 per cent. of alcohol, but part with a good deal by long keeping in the wood. These averages

will form a useful guide to those who are desirous of using fermented liquors for the purpose of aiding digestion, and recovering loss of nervous power,—thus acting on the advice given by St. Paul to Timothy—that he should leave off drinking water, and should take a little wine for “his stomach’s sake.”

The amount of necessary exercise bears, of course, a certain definite relation to the amount of food consumed. Exercise represents waste, and food represents supply. Vegetable food, as we have seen, differs from animal chiefly in occupying a larger bulk, and in requiring a more complicated process of digestion, for the same amount of absolute nutriment capable of being applied to the repair of the human tissues. If the absolute supply exceed the absolute demand, the excretory glands become overtaxed and congested, and the first step towards gout has been made. The object then should be to redress the perturbed balance, either by taking more exercise, or by consuming less food. In the former direction men are especially prone to fall into errors of haste and violence. Perhaps they have little leisure, and they attempt to compress into half an hour or an hour a considerable amount of severe exertion. They procure heavy clubs or dumb-bells, and make frantic efforts when they rise in the morning; or they take a pair of sculls, and pull for an hour or two with all their might. The effect of this is to call certain muscles of the legs and arms into vigorous exercise; but the main stress of the labour falls on the heart, and may inflict upon it serious and lasting injury. If the gouty are driven to severe exercise as a preventive, it should become severe by being prolonged, rather than by being violent. A walk of ten or twelve miles, under clothing which will produce free action of the skin, will be far more effectual than a much greater effort compressed into a shorter period of time. Such an amount of walking is, however, far more than would be commonly required; and a moderate exercise, regularly taken, will preserve most persons in health. I am acquainted with a distinguished London surgeon, who, from the time when his practice first required him to

use a carriage for his professional work, made it his daily practice to walk round the Regent's Park every morning. He finds this amount of exercise sufficient to keep him in health, and to overcome any ill effects that his otherwise sedentary habits might entail upon him. It is, however, too frequently the case that, when an individual becomes immersed in the cares and occupations of life, he neglects to take the exercise to which he was formerly accustomed, and which had the effect of stimulating his heart to healthy action, of duly and properly oxygenating his blood, of improving his appetite, and of assisting his digestion. He was able to "eat and drink anything," and knew nothing of the miseries attendant on dyspepsia. He might possibly at that time have been a large consumer of wine or other fermented liquors, and if the exercise he took produced a copious action of his skin, his system felt no ill effects of his libations. So long as this state of things lasted, he knew as little about the action of the heart as about that of his stomach. His healthy blood, devoid of those deleterious elements which result from an impaired digestion, supplied a wholesome and stimulating fluid to all his vital organs, and their functions seemed to be perfectly performed. The muscular power of his heart was as efficient in propelling the blood through his body, as the muscles of his other members were in performing the duties he assigned to them. His machinery, so to speak, was kept clean, and in good repair, by the use he made of it. When, however, he relinquished the active habit which contributed so much to keep him in health, a marked change would be observable, in a longer or shorter time, according to the nature of his original constitution. All his functions, which hitherto were dependent for their correct performance on the healthful transmission of the blood, now begin to languish; he finds his "wind" is not so good as it formerly was, and he perhaps attributes the change to getting stout; he begins to learn that he must not make quite so free with the pleasures of the table, for his stomach has given him warning that it cannot now be imposed upon, or treated as before. In fact, he begins to feel the

effects of indigestion, more especially as the quantity of food he consumes is probably in no degree diminished from what it was when he was pursuing a more active mode of life. He becomes bilious, low-spirited, and costive; and he finds it requisite to resort to medical advice to supply the place of nature's previous management of him. This is most probably the wisest thing he has done for some time, as his doctor can very readily relieve the earlier manifestations of an impaired digestion; but he will not find it so easy, in the majority of cases, to induce his patient to resume his former habits of life, and to resort to exercise to prevent a return of the symptoms which treatment was needed to remove.

When a paroxysm of gout is actually impending, it may in many cases be anticipated and prevented by judicious treatment; and such a course should be pursued whenever practicable, in order to save the patient from the shock that an attack of acute gout, however skilfully guided, never fails to inflict upon the system.

The symptoms that precede a gouty seizure vary according to the nature of the patient's constitution. If he is of a full habit of body, they will be those indicative of vascular plethora. The venous and arterial systems will be over-charged with a description of blood which will not circulate freely, and hence will occur lethargy, lassitude, an indisposition to move about, and a diffused sensation of fulness over the whole body, combined with more or less mental confusion from cerebral oppression. The chief vital organs, the heart, lungs, and brain, may all display the influence of the impure fluid that permeates their structures. The heart may be affected with palpitation, or its action may be irregular, with an intermittent pulse—signs which frequently create alarm as to the existence of positive structural disease; a sensation of faintness and sinking at the pit of the stomach is no unusual symptom. The extremities are cold, and an unusual chilliness is felt throughout the body, so much so that, in severe cases, I have heard the patient say, "that the blood in his veins seemed frozen, or like ice." Owing to the impaired

mechanical power of the heart, the lungs are insufficiently supplied with blood, the breathing is hurried, even on trivial muscular exertion, and the patient often yawns repeatedly, in order to keep the lungs inflated. The brain may show its participation in the malady by failure of memory; or, in other cases, more or less mental confusion or despondency prevails, and the patient becomes fretful and anxious. The bowels are always more or less constipated, and a general nervous irritability pervades the system. Dyspepsia will often have preceded the recurrence of these symptoms, and will have been attended with anorexia, flatulence, heartburn, and other discomforts. We have in such cases clear indications with regard to the nature of the preventive measures to be employed. The diet should at once be restricted and all stimulants prohibited, and a free and moderately restrained action should be kept up from the bowels. Medicines of an antacid and attenuative kind should be duly administered, until we have reason to believe that the character of the blood has undergone an essential change. At this time exercise is better intermitted. A few days will probably restore the equilibrium of the circulation, and then the patient will regain his ordinary sensations of health.

In such cases, where there is evidence of much congestion of the liver, or of the retention of acrid bile in the gall-bladder, it may sometimes be necessary to administer a dose of calomel, as already advised in the treatment of the actual paroxysm. But calomel is a medicine to be avoided except under necessity; and substitute for it, which in many instances is very effectual, has lately been introduced to us in podophyllin. This drug, however, should not be used when a very speedy effect is desired; because in full doses its action is uncertain, and it is liable to cause vomiting and much griping pain. But when a little time can be spared, it may be given three times a day, in doses of the sixth, or even the eighth of a grain, aided by a little aloine, and combined with an anodyne, such as two or three grains of extract of hyoscyamus, or a sixteenth of a grain of morphia, and with the addition sometimes of

a grain of quinine. Thus administered, its effect upon the flow of bile will usually be displayed about the second or third day, and will be extremely manifest and salutary, without the production of any discomfort, or even of the subsequent torpor of the liver which has been already noticed as following the more active stimulus of mercury.

In the same relation there are many other medicines to be taken into consideration: for it may be said, in a general way, that if there is one means more than another by which a person of gouty diathesis may hope to keep himself in comparative health and freedom from his disease, it is by paying attention to the state of the bowels. It is not intended by this opinion to convey the impression that he is to be continually resorting to aperient medicine, but that he should regularly at some fixed period of the day resort to his *cabinet* to effect this purpose. By adopting this plan, the bowels, so to speak, will become educated to respond to what is required of them. Still it will often occur that there is a failure of this important function; and it is then advisable to have recourse to some mild aperient medicine, in the choice and use of which there will be much room for display of a sound discretion.

It is a question of some difficulty to say exactly when an individual may venture on his own responsibility to resort to medicine of this kind; but we find, as a matter of fact, that most of those who have once suffered from illness have learned some distinctive signs on which they find themselves able to rely. It is often likewise difficult to point out the symptoms that indicate the necessity for medicine of other kinds.

Most persons, the gouty especially, know what is meant by dyspepsia. If they permit the continuance of the discomforts which are included in this comprehensive word, without attempting to remove them, they must in time look for their consequences in the various sensations which indicate derangement of one or other vital organ. The head may become the seat of pain, there may be giddiness, the vision may be disturbed, the

heart may be affected with palpitation, the lungs may show irritation by a dry cough, there may be heartburn, or the stomach and intestines may be distended with flatus. All these symptoms, and many more, may be regarded as reasons why an individual should have recourse to remedies to remove them. None of them perhaps may be very severe, and hence they are easily bearable, but they all indicate imperfections to which the wise pay early and careful attention. It is the neglect of symptoms that are thought only trifling which frequently leads to obstinate or incurable disease. It is true that we occasionally meet with persons who have been more or less sufferers from dyspepsia for the chief part of their lives, and in whom no apparent organic mischief has taken place; but these persons must be considered as exceptions to the rule, and their escape from injurious consequences may mostly be traced to the occasional occurrence of some effort of nature, such as a diuresis, or a periodical diarrhœa, which has served as their protection and safety valve.

When no evidence of hepatic or biliary derangement is present, the simpler the medicines that are taken the better. A combination of the compound extract of colocynth with extract of taraxacum in the form of a pill, the compound rhubarb pill with the compound galbanum pill, and various analogous forms, will prove serviceable as stimulants to the intestinal mucous surface, by promoting an increased action of the bowels. When there are symptoms of biliary derangement which simple medicines of this kind fail to remove, the patient may either take podophyllin in the manner already suggested, or may add, to either of the above formulæ, two grains of grey powder or blue pill, to be repeated for two or three consecutive nights. Either course will most probably prove speedily effective.

The prevailing tendency to acidity is the symptom which most disturbs the comfort of a gouty person, and is one of the causes of his various minor ailments; and this may be combated by a judicious employment of one or other of the numerous alkaline remedies that are effectual in affording temporary relief. A few

grains of the sesquicarbonate of soda or potash dissolved in a wine glassful of warm water, to which a small teaspoonful of sal volatile is added, and taken shortly after a meal, will often prove a valuable remedy in correcting and controlling an excess of acid in the stomach. The same quantity of the alkali, combined with powdered rhubarb and powdered calumba-root, and taken twice in the day in a similar vehicle, will sometimes be found to prevent the formation of an inordinate amount of acid secretion. An addition of twenty grains of calcined magnesia to the sesquicarbonate of soda or potash, when taken with sal volatile and water, will generally remove in a short time the distressing headache which some gouty persons experience when labouring under an excess of acidity. This medicine may be repeated in four or five hours if relief is not afforded by the first dose. Simple remedies of this nature, when only occasionally resorted to, often prove effectual in giving relief; but it should be observed that, as they are only palliatives, they should be used with discretion, and not taken on all occasions. An injudicious or too frequent employment of alkaline remedies very often aggravates the malady for which they are prescribed, by increasing the debility already existing in the digestive organs. The continuance of such a symptom as acidity clearly points to the existence of certain errors and defects in the digestive apparatus; and an individual who is the subject of it should not rely entirely upon himself, nor imagine that by simply correcting acidity he can remove the cause from which it arises. He should therefore trust to the judgment and knowledge of his medical adviser, who will be able to discover the causes of his malady, and to prescribe a treatment which will afford him permanent relief.

The symptoms which precede an attack of gout in a patient who does not possess a strong constitution, in whom the heart is feeble, the circulation languid, and the blood poor, will be materially different from those already described. Although vascular plethora may be present, it is not so profound as in the instances just

referred to, nor is there so much difficulty in restoring the circulation to a more healthy state. In cases of atonic gout, the serum preponderates over the more solid constituents of the blood, and is overcharged with the peculiar elements belonging to urea and its combinations. It thus becomes a poison not only to the more solid portions of the blood, but also to the various tissues of the body through which it circulates. In one respect the treatment of poor and rich gout must be the same, and that is with reference to the necessity for cleansing the body by the aid of depurating and eliminating medicines; but the mode of procedure in the two cases will be different. It will be proper in both to restore the healthful action of the liver, upon which the correct action of the bowels depends; but in gout of a depressed description it is necessary to be cautious in the employment of the medicines by which this object must be accomplished. The aperients prescribed should be warm and stimulating, so as not still further to lower the already languid circulation. The judicious use of stimulants will also be demanded; to maintain the power of the heart, and to compensate for any depression which may be produced by an increased and necessary catharsis. The alkaline remedies required to correct the vitiated state of the blood and the secretions, should be combined with full doses of ammonia, either with or without chloric or compound sulphuric ether, according to the urgency of the case.

The diet should be light, nourishing, and easy of digestion; and none answers better, according to my observation, than strong beef tea with vermicelli. The quantity to be taken should be a half-pint tumbler-full, one-third of which is occupied by vermicelli (which has previously been macerated) every third or fourth hour, or at longer intervals, according to the requirements of the patient, followed an hour after each quantity by a tablespoonful of brandy in two of water, if the langour and oppression of the system should demand the employment of this stimulant. The frequency, however, of its repetition must be left to the judgment and discrimination of the practitioner, who will be guided in

his decision by the increase or diminution of power displayed in the action of the heart.

When we are satisfied that the heart has regained its customary resiliency, and that the remedies employed for correcting the defects of deranged secretions have accomplished their object, it will be requisite to maintain the improvement by administering remedies of a tonic kind, not only to sustain the mechanical power of the heart, but also to improve the digestive function of the stomach, and to contribute to the formation of a better and more wholesome description of blood, upon which the integrity of all the organs of the body depends. The selection of the most suitable remedies must be left for the decision of the medical attendant, who will prescribe quinine, iron, or the two combined, mineral acids, etc., according as the state of the case demands them: regard being had to any special peculiarities of the individual patient. In most cases of poor gout, either actual or threatened, it will be found necessary to administer iron in some of its various forms, and at the same time to combine with it suitable aperients, in order to guard against the constipation which it is otherwise liable to produce.

In the intervals between attacks of gout, and with a view to the prevention of their recurrence, we shall often be consulted with reference to the habitual or occasional use of alcoholic drinks. In determining the point, it is necessary to take into account all the circumstances of the case, the previous habits and the remaining vital force of the patient. There are many gouty persons who might with great advantage become habitual abstainers; there are many others to whom abstinence would be hurtful. The first class require no special mention. It is very easy to recognise those who constitute it; it is usually very difficult to induce them to follow the course which would be best for them. They will ask, however, what form of stimulant will do them the least injury, how and when it should be taken, and what dose would be a moderate one; and in answering these questions we must be guided by the same principles which would influence our instructions to the patient

by whom some form of alcohol is required. In the first place, it may be said that the supposed connection of port wine with gout is a fable, having no better foundation than the generally gout-producing habits of the systematic drinkers of the last generation. Sound port, of good original quality, and well kept, is the most perfectly wholesome of all forms of wine, but it may easily be taken to excess. Perhaps two glasses, with or after a meal, would be as large a quantity as would in any case be beneficial; and any greater consumption than this may at least be regarded as going beyond the medicinal use of the stimulant. With regard to other wines, so much more depends upon quality than upon name, and in these days tradesmen so readily profess to supply any wine that is asked for, from Chateau d'Yquem downwards, whether or not it is in the market, that experience furnishes the best criterion of wholesomeness. The filthy concoctions of certain advertising wine sellers may very often cheat the palate, but they seldom or never cheat the digestion. The stomach finds them out; and the gouty consumer can do no better than adopt the Scriptural precept—"Prove all things: hold fast that which is good." A wine which produces acidity, heartburn, or flatulence, should be cast aside as a noxious thing, whatever be the name by which the dealer called it, or the price which the purchaser paid. A wine that is clean on the palate, grateful to the epigastrium, and that leaves no painful memories behind, is sure to be wholesome to all those who do not drink it in superabundant quantity. The gouty must therefore be guided by two main rules: the first, to be cautious in their experiments: the second, to be moderate in their potations.

Under many conditions the use of diluted spirit will be found preferable to that of wine; especially as the spirit may be diluted by some natural or artificial alkaline water. I am acquainted with a gentleman, seventy-five years of age, and weighing nineteen stone, who has enjoyed almost entire immunity from gout since he adopted the daily use of Vichy water and brandy. Up to the age of sixty he was of very active

bodily habits, a deer-stalker, and otherwise a keen sportsman; and he has always been a man of great intellectual activity, both in science and literature. From the age of thirty-two or thirty-three he was constantly subject to long and severe attacks, so much so that in recent years he has been often laid aside for nearly half his time. Rather more than a year ago he commenced the practice of taking two tumblers of Vichy water daily, with a small wine-glassful of brandy in each tumbler, and since then has had only two slight indications of gout, lasting about forty-eight hours each. There has been no other change in his diet or medicine; but his freedom from gout has enabled him to lead a more active life than he had done for some time previously. It would not be safe to found a practice upon a single instance; but the instance is none the less worthy of being borne in mind.

Besides brandy, recourse may be had to other forms of alcohol, among which very old rum and very fine Dublin whisky fully deserve the pre-eminence which tradition has accorded to them. As with wine, so with spirit, quality is often a fair test of wholesomeness; and the cheap corn spirit that is sold under fine names is usually noxious as well as nasty.

Among the varieties of fermented drink that are adapted to quench thirst, the gouty should usually give the preference to some of the lighter wines of the continent, when these can be obtained in the wood and direct from the grower. Heavy ales and stout are always objectionable, and cider and perry are often imperfectly fermented, or otherwise badly made, and hence unsuitable for persons of weak digestion.

I have thus laid down as the main principles to be observed in the prevention of gout; first, that a judicious balance must be maintained between the waste of the body and the amount of material supplied for its repair; secondly, that the exercise required for the maintenance of health must be moderate and sustained, rather than brief and violent; third, that the bodily functions are to be watched and, when necessary, assisted; and fourth, that the grumblings which indicate

a coming storm should be made the occasion of prompt and decided medical treatment. The gouty have almost always some warning of their attacks, and if they would lay it to heart that gout may be cured without waiting for the development of a paroxysm, they would be saved from pain, which is not only eminently distressing and enfeebling, but which drives too many sufferers into that broad and downward path, the entrance to which is opened by the improper use of colchicum.

CHAPTER IX.

THE TREATMENT OF COMPLICATIONS.

BESIDES the management of the actual gouty paroxysm, and the recommendation of such a mode of life and such a plan of medication as may serve to prevent its recurrence, the practitioner has yet a highly important duty to the treatment of complications. Some of these have already been described in an earlier chapter, and it has been shown that they may either be connected with the paroxysm or intervening at irregular intervals between them. Moreover gout, like syphilis, modifies in a very remarkable way forms of disease which have no apparent relation to it, and renders them intractable under treatment to which, but for the gout, they would readily have yielded. It also simulates other forms of disease, and has often deceived men of great experience and acuteness. Two instances have come within my knowledge, in which it gave rise to symptoms closely resembling those of strumous disease of the cervical vertebræ, and led some of the most distinguished physicians and surgeons in London to believe in the existence of this very serious affection, and to prescribe and predict accordingly. In the first of these cases, genuine gout showed itself in the foot, and the neck immediately got well. In the second, a surgeon who had seen the first, chanced to be called in as an additional consultant, and was able at once to dispel the anxieties of the patient. In the female sex, a tendency to gout is often associated with that condition of exalted sensibility of the nervous system which leads to a variety of anomalous hysterical

or emotional disorders; and in all such instances, whenever there is, so to speak, an under-current of gout in the blood, it will be necessary to have recourse to proper eliminative treatment before the disease can be cured. It would be impossible for me even to enumerate all the conditions which gout may simulate or modify; and I can only lay down the general canon that, when any malady pursues an abnormal course, or presents an abnormal intractability, we should seek for an explanation in some personal peculiarity of the patient himself, and generally in some diathetic peculiarity, such as constitutional gout or constitutional syphilis. There are, however, a few affections to which the gouty are particularly prone, and to some of the chief of these it seems desirable briefly to refer.

The condition of the heart is one of the elements of the gouty constitution which frequently forces itself upon the attention of the patient during the intervals of disease; but there is little to be said with regard to its management, in addition to the general principles which are universally known and acted upon. If the heart's action should be feeble, either from natural debility or from acquired poverty of blood produced by repeated attacks of gout, we shall usually find nothing so efficacious in improving its condition as the various preparations of iron. For this purpose they should as a rule be given in small doses, and continued steadily for a considerable length of time. The power of choice of the practitioner has of late years been considerably enlarged by the manufacture of several highly soluble and comparatively palatable ferruginous salts; and these afford, moreover, great facilities for combining the iron with other remedies. The old-fashioned tincture of the sesquichloride of iron will not, however, be easily surpassed. It admits of being combined with quinine, with hydrochloric acid, with perchloride of mercury, with chloride of arsenic, with chloric ether, and with quassia; and it is well to remember that, like wine, it improves with age, and, probably from the development of some etherial compounds, becomes more palatable and more grateful to the stomach by keeping. When

ever it can be obtained, a tincture at least three years old is greatly to be preferred. The potassio-tartrate of iron combines well with alkalies, the ammonio-citrate with iodide of potassium. Sometimes, however, any preparation of iron has a tendency to confine the bowels, and this tendency should always be overcome, either by the administration of aperients of the class that directly stimulate the muscular coat of the bowels, such as pills of aloes with myrrh, perhaps combined with compound galbanum pill, or what is sometimes better, by giving the iron in the form of sulphate, together with a suitable quantity of sulphate of magnesia or of sulphate of potash. To this mixture, if it be acidulated with dilute sulphuric acid, we may add either quinine or some one of the lighter bitter infusions, such as quassia, calumba, or gentian.

The most dangerous complication of gout is probably bronchitis, a malady which is often and speedily fatal; and I am disposed to think that the danger attending it is chiefly due to two causes, both of which are more or less connected with the diathesis. The first of these is a congested liver, which, if not relieved, invariably adds to the suffering of the patient, aggravates his cough, and increases his difficulty of breathing. The second is a condition of the blood which promotes the occurrence of congestion in the lungs, and in the mucous surfaces lining the air passages. The state of the liver may be ascertained by the condition of the tongue, and by the various other signs that indicate hepatic derangement. The state of the blood is less easy of discovery, but we may, by the exercise of due care, arrive at tolerably certain conclusions with regard to it.

It is an old observation, that a man seldom takes cold if his stomach is in good order; and that he is unusually prone to suffer from variations of temperature when his digestive functions are impaired. This may be explained on the hypothesis of a defective state of the blood, produced by imperfect digestion and assimilation, which renders it less capable of sustaining the integrity of the various bodily functions, and thus diminishes the general vital resistance to noxious influences.

We may find evidence that the blood does undergo some morbid change as one of the results of a chill, by observing what takes place in one of the most exposed of the mucous surfaces, namely, the Schneiderian membrane lining the nose. When an ordinary catarrh affects this membrane, the secretion from it is frequently rendered so irritating, that it acts as a direct irritant on the surface of the upper lip over which it passes. After a time, however, the secretion changes its character, becomes thicker and more bland, and the membrane is restored to its natural state.

A condition analogous to the irritation observable in the membrane lining the nose is produced in bronchitis. We cannot, indeed, see the mucous membrane lining the air-tubes, but we are made sensible of the irritation which exists in them by the efforts of the patient to rid the lungs of an unnatural secretion by coughing. Until this secretion is expelled, the cough is frequently incessant; and even when the lungs appear to be freed from mucus, the cough still continues. This arises from the contact of air with the mucous membrane, probably denuded of its epithelium; and, until certain alterations are effected in the blood, the cough will continue to harass the patient.

So long as there is an excessive secretion of mucus in the air-passages, the cough should be regarded simply as an effort of nature to relieve those organs of something which oppresses them and prevents the free oxygenation of the blood; and, if we attempt to subdue the cough by administering sedatives, such as opium in one or other of its various forms, we may, indeed, allay the immediate irritation and distress, but most probably at the same time we shall, if we do not remove the patient from the scene, at least place his life in extreme jeopardy.

It has more than once occurred to me that, persons who suffer from gout might with great advantage be instructed with regard to the real significance and value of many of the symptoms which oppress them; and that they would thus not only be rendered more patient and docile under rational treatment, but might even

themselves render material assistance to the physician. Now it would be very possible to draw an instructive parallel between the pain of gout and the cough of bronchitis. The injury that follows the too speedy reduction of the pain in gout, by the use of specific remedies, is fairly comparable to the danger of the arrest of cough by sedatives in an acute attack of bronchitis. The pain in gout and the cough in bronchitis are pathognomic symptoms of these diseases. If we give medicine like colchicum to relieve the pain, before we remove the causes by which the pain has been created, we not only leave the causes to come again into activity, but also, by the injurious effect of the medicine on the heart, stomach, and blood, we lay the foundation of a succession of attacks of the malady. These may indeed be deferred for a comparatively lengthened period in persons of powerful constitution; but their ultimate occurrence is certain, unless means are resorted to which are real preventives of gout. The pain in gout should always be regarded as a valuable index of the innate strength of the individual, and should not be rashly interfered with if we are anxious to study his future welfare.

The cough in bronchitis is an effort of nature to discharge from the lungs and air passages the accumulated mucus consequent upon the congestion of the membrane lining the bronchi. The heart at this time is struggling to propel the blood through the lungs; and, owing to the imperfect oxygenation or decarbonization of the blood arising from this state of congestion, it is perhaps barely able to fulfil its office. If, in such circumstances, a sedative like opium, or any of its preparations, be given to cure the cough, an immediate effect will be exerted on the heart. Its violent action is at once lessened, the pulse diminishes in frequency, the cough is abated, and the patient sinks most probably into a quiet slumber from which he may never awake, or from which he may awake labouring under a degree of asphyxia that soon closes the scene.

Instances of this kind are by no means uncommon; and the danger of the injudicious administration

of sedatives, in the suffocative or congested stage of bronchitis, cannot be too forcibly insisted upon. I will relate an instance in point, which was communicated to me by the late Mr. Fuller, of Piccadilly. He had attended for many years an elderly lady, Miss G——, who suffered from periodical attacks of bronchitis. On the occasion of one of these attacks, she became impatient because Mr. Fuller would not consent to “stop her cough.” He told her he could easily do that but that such a course would be attended with danger. This did not satisfy Miss G——, and she begged that Mr. Fuller would call in the late Sir Henry Hallford. Her first exclamation when she saw Sir Henry was, “Do, pray, Sir Henry, give me something to stop my cough.” Contrary to Mr. Fuller’s opinion, Sir Henry complied, and ordered thirty minims of paregoric, or the equivalent of the sixteenth of a grain of opium, to be taken at bed time. Miss G—— took the draught, and after a minute or so said to her maid, “Oh, how pleasant!” She closed her eyes, and never opened them again. In the morning she was found to be dead.

The evidence in this case was indisputable, that the effect of the sedative, small as the quantity was, proved sufficient to stop the heart of this lady, and to cause her death. The action of the medicine was prompt and decided. The effect of colchicum is not so speedily discerned. We must take a longer time to observe its undermining influence upon the constitution. The process is slower or quicker according to the original condition of the “fibre” of the patient. If he is of a tense muscular fibre, a longer time will elapse before the poisonous effects are discernable; if he is of a relaxed or flabby fibre, the results are more speedily appreciable.

The spirit of mindererus, in mild attacks of bronchitis, is a very useful medicine, combined with decoct. senegæ, cinchona, etc., etc., and it has the property of allaying irritation by its action on the blood; but the medicine I have found most serviceable in shortening the duration of the more acute forms of bronchitis

in gouty subjects, as well as in others who have not been affected with gout, is the liquor potassæ. I have usually prescribed it in scruple doses three times a day, in combination with chloric ether or ammonia, and with a pill at bed time, composed of the compound conium pill, pil. scillæ co. and pil. rhei. co.; the strength being sustained by frequent doses of strong beef tea, with vermicelli, and by small quantities of brandy at stated intervals, according to the condition of the patient.

The difficulty of breathing, coughing, and irritation can be with safety greatly mitigated by the use of an embrocation composed of the compound of camphor liniment with laudanum, rubbed over the sternum, collar-bones, and spine of the back every night and morning.

A lady aged eighty-five, had for some years been subject to occasional bronchitis in the winter. She had an attack of more than usual severity in 1868, and it was thought she would die. She was treated in the manner recommended above, and in the course of a fortnight regained her ordinary health.

A gentleman, aged 82, in 1869 had a similar attack, attended with nummular expectoration, great difficulty of breathing, and excessive cough. He was similarly treated, and at the end of three weeks was convalescent.

A lady, aged 84, was seized with a severe attack of bronchitis, attended with difficult respiration, incessant cough, and very scanty expectoration. Her tongue was foul and her complexion sallow. She had suffered occasionally from attacks of gout and rheumatic gout and her hands were distorted with chalk-stones. She also was treated much in the same manner as the former patients, but it was necessary at the onset of her attack to give her, for a few successive nights, small alterative doses of calomel with James's powder, which had the effect of cleaning her tongue, removing the sallowness of her complexion, and causing her breathing to become comparatively easy. It was also requisite, once or twice in the course of her illness, to administer a half-ounce dose of vinum ipecacuanhæ to assist in the

expulsion of the mucous which clogged her bronchial tubes. This plan was attended with the best effect, and she was convalescent at the end of a month.

I have rarely been disappointed in obtaining the good effect of liquor potassæ in the first stage of the bronchitis affecting gouty persons; and in some instances the patients have continued to take it throughout the attack. We may decide when the necessity for this medicine no longer exists by the appearance of the tongue, the mitigation of the cough, and the altered nature of the expectoration. When its use is abandoned, we may then with advantage prescribe quinine in combination with dilute sulphuric acid.

Dr. Garrod is of opinion that the liquor potassæ exercises but little influence in correcting acidity as the quantity of alkali absorbed into the system is exceedingly minute; that its influence is probably exerted chiefly upon the mucous membrane of the stomach and its contents; and that it therefore acts simply as a direct antacid and local sedative, the alkali absorbed being insufficient to render the urine either neutral or alkaline.

That the sedative effects of liquor potassæ are not confined solely to the mucous membrane lining of the stomach, I have had repeated proofs. My observations of the effects of this medicine have led me to the conclusion that its benign and soothing influence is diffused throughout the entire mucous surfaces of the body, more especially on the membranes lining the air passages, an effect which can only be accomplished by its absorption into the mass of the blood.

Whatever the quantity of alkali may be that is absorbed, it appears to me to be sufficient to effect the purpose of correcting the acidity and acrimony of the blood incidental to the condition of this fluid in an attack of gouty bronchitis.

The gouty not unfrequently exhibit a marked tendency to apoplexy; which may either be dependent upon disease existing in the heart, which fails to supply the brain with a due quantity of blood, and produces the serous form of the malady, or upon degeneration of the coats of the blood-vessels from atheromatous

deposits, associated with an undue pressure upon them from an abdominal congestion and general plethora of the circulating system.

The individuals most prone to the latter form of the malady, are those with short necks, large heads, and in whom large deposits of fat have taken place, more especially in the abdomen. The serous form of apoplexy is observed more frequently in those persons who are of a spare form, and who have a languid circulation.

The prevention of these two forms of apoplexy is to be aimed at by different methods of treatment. The corpulent individual must submit to a careful system of purgation, to relieve the body from its superabundant fluids, and for the unloading of his venous system. He should also be subjected to a judicious use of those medicines that sustains the action of the heart and muscular structures, in order to compensate for any feelings of debility which the catharsis may occasion. He should be enjoined to be much in the open air, and to take as much exercise as his strength will allow. Temperance in eating and temperance in drinking are also necessary to be observed.

The spare individual will require less purgation than the former; but, even with him, it will be requisite to pay attention to the state of his bowels. If his circulation be languid, he will derive most benefit from those tonic medicines which will increase the power of his heart, improve his digestion, and maintain a just equilibrium of his circulation. He also should be much in the open air, and should take exercise in moderation. His use of stimulants should be limited to just sufficient to maintain the normal power of his heart's action, without occasioning undue excitement; for this, if produced, would certainly be succeeded by a corresponding depression. The description of stimulant most suitable for either case should be left to the direction of the medical adviser, to whose judgment in the matter the patient should rigidly adhere.

It is not usual for females to be attacked by gout prior to the natural cessation of the catamenia,

although there are a few exceptions to the rule. When menstruation ceases, however, they frequently become sufferers; and menorrhagia is one of the forms that the disease assumes. I have known instances in which this flux had the effect of preventing the system from being attacked by a fit of gout up to a very advanced period of life; but the individuals have not escaped the consequences of the inheritance of a gouty constitution. It has not uncommonly happened that the eyes have been affected, and the sight of one or both of them destroyed.

It will usually be found that such patients, prior to the attacks of menorrhagia, have been more or less subject to hepatic derangement, arising in most cases from a life of indulgence, and from the consumption of an amount of food and stimulants equal to that which they had taken before the cessation of the menses. The consequence of such a course appears to be, that the glandular and venous systems become congested—the liver more especially, and the excessive loss of blood relieves the body from this glandular and vascular plethora. If it is restrained within moderate limits, the consequences are not often serious, unless the patient be of very weak constitution; but when an immoderate quantity of blood is lost, the resulting debility is often productive of gout and other serious maladies. The treatment that is most efficient in restraining menorrhagia is twofold, and consists in relieving the congested organs and in sustaining the vital power during this operation.

It will generally be found in such cases that the liver is chiefly affected by a retention in it of a surplus quantity of blood; and, until this is relieved by suitable remedies, neither tonics nor astringents appear to exercise much control over the complaint, and the patient will day by day become weaker and weaker, until gout, dropsy, or some other malady puts an end to life. I have had frequent opportunities of judging of the correctness of this assertion, and have been repeatedly disappointed in the effect of medicines of a tonic and astringent nature in controlling menorrhagia; while,

on adopting an eliminating treatment in conjunction with one of a tonic and astringent nature, I have succeeded in putting a stop to the discharge.

Hæmorrhoidal bleeding is also a striking instance of the effect of long-continued hepatic congestion. In this form of disease the same results as in menorrhagia take place when the hæmorrhage has been excessive, and may often lead to a fatal termination. This is owing to the diminution of the solid constituents of the blood, the fibrin and the red corpuscles, which follows from repeated bleeding. The blood becomes pale, watery, and inadhesive; and is not only incapable of sustaining the various vital functions of the body, but directly promotes the occurrence of hydro-thorax, ascites, or fatal syncope. The action of the heart becomes enfeebled by its impaired nutrition, and fatty degeneration of its structure may sometimes be produced.

There is a chronic form of hæmorrhoidal bleeding which is often most difficult of cure, and of which I have seen several instances. One very remarkable case I will relate; and I would not venture to do so if I could not entirely rely upon the veracity of my informant, who had been for many years a sufferer from this malady. His fees to medical men had quite impoverished him, and ultimately rendered it necessary for him to obtain the hospitable shelter of the Charter House, where he ended his days at the age of eighty-seven. In giving me the history of his case, he told me that he had been a sufferer for twenty years from an almost daily discharge of blood from his bowels, which kept him so weak that he was scarcely capable of attending to his business. He was a glover by trade. He had consulted all the best medical men and surgeons of his day, and amongst the latter, I remember, were Sir Astley Cooper and Chevalier. No one did him any good. An old woman came into his shop one day, and addressed him thus: "Mr. M ———, you look very ill; would you mind telling me what is the matter with you?" He felt no hesitation in doing so. And his visitor replied, "I thought by your appearance you were suffering from a loss of blood, and that is why I asked you. If you

will do as I tell you, I will cure you. Get a piece of alum the size of a pigeon's egg, and carry it constantly in your breeches pocket, and I will call in a fortnight and ask how you are." She called at the time she promised, and Mr. M—— was able to inform her that at the end of a week the bleeding had stopped, and he had had no return of it. This recital appeared to me as strange as the belief that many people formerly entertained of the efficacy of carrying a cramp bone in the pocket for the prevention of cramp; but although I felt incredulity, I expressed none, as I knew that my informant would relate only what he believed to be true. I asked him how long it was since he commenced to act on the old woman's advice. He replied, "Twenty years: and I have never had any return of the bleeding." I inquired whether the alum that he carried in his pocket diminished in size. He said that it wore away after a few weeks, and he had occasion to renew it constantly. He put his hand into his pocket, and produced a piece of alum that he had purchased only the day before. When I learned that the alum wore away, I was not so surprised as at first, and an explanation of the *modus operandi* of so simple a remedy occurred to me. The heat and moisture of the body had acted upon the alum, and caused it to give off its astringent property, which, being absorbed by the skin, exerted its influence upon the pelvic viscera and blood-vessels. The effect was to constrict the hæmorrhoidal vessels and to put a stop to the flow of blood. I have tried this simple remedy in several instances, and usually with success. When ordered for females, I make them wear a piece of alum in a small packet suspended from the waist; and I have some interesting daily records of the diminution of the flow of blood from the bowels, when the cases have been suitably selected. They should be such as occur from a general relaxation of the vascular and muscular systems, and are unconnected with organic disease. In other respects the treatment of hæmorrhoidal bleeding is identical with that of menorrhagia, and consists of the use of mild alteratives, with or without sedatives, tonics, and astringents.

Another form of hæmorrhage that frequently occurs in the gouty, is epistaxis, or bleeding from the nose. With regard to this Dr. Gairdner observes, "The occurrence of very profuse epistaxis in gout should always rouse suspicion of the condition of the heart's structure. No matter how calm its functions, and no matter what the indications of the stethoscope, this symptom must be viewed with more or less apprehension. I have never seen blood poured in copious streams from the nose—and this symptom is by no means very rare—without having good reason, *sooner or later*, to trace it to mischief about the heart."

There is no doubt as to the correctness of Dr. Gairdner's opinion that epistaxis is a result of a deranged action of the heart, although there may be an absence of any stethoscopic signs to indicate the existence of disease in this organ. I have seen repeated instances of this kind, but I have invariably found that the persons so affected have had more or less enlargement and congestion of the liver; and I have also found that the most effectual method of putting a stop to the hæmorrhage has been by at once administering calomel to relieve the vascular plethora that has proved the exciting cause of the loss of blood. It is most important not to err in our diagnosis with regard to the cause of a hæmorrhage of this nature, for by doing so, we shall ultimately favour the production of disease of the heart, by allowing the liver to retain that increase of its volume which has proved a mechanical impediment to the transmission of the blood to the right cavities; such continuous interruption being likely to terminate in disease and change of structure. According to my own observation, hæmorrhage from the nose, whether in young, middle-aged, or old persons, has always been connected with an enlarged or congested liver; and the mechanical stoppage of the flow by plugging the nostrils should not induce us to overlook the condition which gave rise to it. It must not be forgotten that the hæmorrhage, whatever the source of the congestion, points to morbid fragility of the walls of the minute arteries, and hence to a liability to a recurrence of

bleeding elsewhere. The careful treatment of the epistaxis of the middle-aged may often ward off an attack of apoplexy.

The cerebral functions are sometimes seriously, at others comparatively slightly, affected in gouty persons. Optical delusions, mental phantasies, and perversion of ideas will occasionally be met with, all resulting from the impaired stimulus of the vitiated and gouty blood, and all requiring an eliminative treatment for their cure. Giddiness is also a very common symptom; and appears most frequently to be caused by oppression of the right side of the heart, due to congestion of the liver and abdominal plethora, the blood failing to ascend in sufficient volume to supply the heart with the means of maintaining the integrity of the cerebral circulation. Various neuralgic pains, as they are called, may owe their origin to a gouty diathesis; and there is scarcely a portion of the body which may not be at one time or another so affected. The dense fascia at the back of the neck is often the seat of severe pain from this cause—pain which is ordinarily ascribed to rheumatic influence. But the most important of the nervous disorders incidental to gout is hypochondriasis; and I have repeatedly found that the urine of gouty persons so suffering contained crystals of oxalate of lime, frequently of considerable size. The fact of chief interest connected with these crystals is the bearing of their presence upon the medical treatment of insanity; for I have invariably found them associated with more or less mental depression, in some instances to such an extent that the patients have contemplated suicide as an escape from their sufferings.

On the occurrence of a fit of gout, or when the condition of the blood, previously contaminated by a superabundance of oxalate of lime, has been changed by the aid of medicines, the delicate organization of the brain has ceased to be irritated or affected, the despondency has disappeared, and the patient has regained his mental equilibrium and his normal state of health.

A lady, aged fifty-eight, who had long experienced the morbid sensations connected with the rheumatic-gout

diathesis, and was frequently subject to lowness of spirits and despondency without any sufficient external cause, had a more severe attack than usual of mental depression. On making a careful examination of her state there was nothing abnormal to be discovered, excepting, perhaps, that she was a little paler than usual. Her circulation was feeble, as it generally was; her tongue was quite clean and of a good colour; her appetite fair, and she slept tolerably well. On an examination of her urine, large crystals of oxalate of lime were detected. She was ordered some medicine containing nitro-muriatic acid and taraxacum, but without benefit. Her medicine was then changed to the tincture of the sesquichloride of iron, with tinctura lyttæ and mild alteratives, and she then rapidly regained her usual spirits. The pallor of her countenance was not at first thought sufficient to demand the administration of iron; but the result proved that this medicine was what the lady's constitution required.

The medical treatment of such cases varies according to the state of the patient; and it will be found that the appearance presented by the tongue will be a valuable guide to the description of medicine to prescribe. If the tongue be not perfectly clean—that is, if it be not free from fur of any colour—it is seldom safe to give acid or tonic medicines until the coating has been removed. This may usually be accomplished by alkalies; which, under such circumstances, operate indirectly as tonics by their effect in correcting the vitiated secretions of the body. They deoxidize the morbid products which exist in the blood and tissues, and the presence of which may be inferred when a loaded state of the tongue exists.

The most effectual method of prescribing fixed alkalies is to combine them with ammonia—either the aromatic spirit of ammonia, sesquicarbonate of ammonia, or eau de luce. These may be given with some light bitter infusion and some aromatic tincture. If nausea be complained of, they may be given in an effervescent form. If hepatic dérangement be present, an addition may be made of small doses of iodide of potassium, from

a grain and a half to two grains for a dose. The effect of medicines of this nature is greatly accelerated by a mild alterative, with or without a sedative. Three or four grains of the compound rhubarb pill or extract of colocynth may be taken every night, or every other night, according to the requirements of the individual case. When the tongue has become clean it will be desirable to give the mineral acids, either the dilute nitro-muriatic, dilute phosphoric, or the dilute aromatic sulphuric acid—the latter more especially if the tongue is relaxed in appearance. Should these acids fail to produce a return to a healthy state of mental feeling, the stronger tonics may be resorted to, such as iron, quinine (combined or not), with either the dilute sulphuric or nitric acid. If there is much langour of circulation, the tincture of the sesqui-chloride of iron may be given with chloric ether and tinctura lyttæ, to which also may be added the disulphate of quinine.

I have almost invariably found that it is requisite to give occasionally some mild alterative and laxative pill at night, in order to ensure the speedy and beneficial effects of a tonic treatment. The liver needs the stimulus of medicine of this nature when its function has been for a long time impaired, and I have seen great benefit result from this mode of treatment. I am quite aware of the prejudice entertained by some medical men against the employment of medicines of this class, but if their experience has been the same as mine, it would lead me to say that they must often have met with disappointment when their alteratives and tonics have not gone hand in hand, and that their dependence on the latter alone for patients who have been sufferers from oxaluria, or suppressed gout, cannot have been satisfactory in its results.

It is occasionally requisite to order for those who are suffering from the effects of an oxalate of lime diathesis, the use of a more generous description of wine than it has been their habit to take, such as sound Madeira, or sherry; and old port wine when there exists a marked evidence of a deteriorated and impoverished state of blood. The result of such treatment is either

to dissipate through the stimulating agency of these potent wines the *materies morbi* from the system, or to facilitate the occurrence of a fit of gout. The prognosis in either case is generally favourable.

Gouty persons are often greatly alarmed by sudden changes in the state of the vision, as by seeing double, losing a portion of the field, the appearance of wavy coloured spectra, etc., etc. Such symptoms are in the majority of cases due to transient derangement of the retinal circulation, and in that case disappear as suddenly as they arose; but they are not wholly free from risk of being attended by retinal hæmorrhage, by which permanent mischief may be done. Again, when sudden impairment of vision occurs in persons past middle age, a careful examination of the degree of hardness of the globe of the eye should always be instituted; since glaucoma seems especially prone to attack persons of gouty constitution, and is liable to produce complete destruction of sight unless early recognised and treated.

The late Mr. Abernethy, who devoted much attention to the disorders of the digestive organs, was well acquainted with some of the disturbances of vision, especially with the temporary loss of a portion of the field, which may thus be produced; and indeed he was himself an occasional sufferer from this form of affection, and was accustomed to describe the effect of it in his lectures in his usual humorous way. He told his students that, on one occasion, when looking in at a bookseller's window where one of his own works was exposed for sale, he could not see the whole of his name on the title-page. "I could see my *knee*," he said, "but I could not see my *thigh*."

In persons of advanced age, who possess the gouty diathesis, we occasionally meet with sudden loss of memory, usually preceded, for a short time only, by some cerebral excitement, and followed by a rambling and unconnected strain of conversation.

The occurrence of these symptoms always creates apprehension in the minds of friends; and not without reason, for, unless relieved by appropriate treatment,

the patient goes on talking and rambling until his powers are exhausted, and he dies from what may be described as senile delirium. I have attended several cases of this description at various times; but it was many years before I discovered how to explain these extraordinary seizures, and the means by which they could be relieved, and the patient saved from the danger that impended over him. On this subject my views have already been given to the profession,* and I need only say that I regard senile delirium as a symptom of a loaded state of the bowels, and as admitting of immediate cure by the administration of a rather active purgative. Upon careful examination of the abdomen, the colon will always be found more or less distended with faecal matter; and on the removal of this cause of irritation, all the cerebral symptoms will subside.

The selection of a purgative must be guided by the state of the patient's tongue. If this is foul or furred, no medicine acts so energetically and favourably as two grains of calomel, with five of colocynth, followed in five or six hours by a warm saline aperient draught. If the attack is a mild one, and the patient is feeble, with a comparatively clean tongue, a dose of castor oil will sometimes prove sufficient; but, in all these cases, the use of narcotics, in the hope of allaying excitement and producing sleep, will be followed only by a fatal result.

The gouty are very often the subject of diseases affecting the skin; and the treatment of these should always be conducted with great circumspection. So long as the skin affection remains in activity, the general health is frequently improved, the eruption appearing to act as a safety-valve for the removal of other symptoms; so that, if it were not for the discomfort occasioned by its presence, the patient would in many cases declare himself to feel more comfortable and better than before. People usually desire, however, to get rid of what they think unsightly, and hence some persons will cheerfully submit to any remedies for the

* See *The Practitioner* for November, 1870.

sake of a speedy prospect of cure. In some instances, medical men may find themselves placed in a difficult position. If they have had experience in former cases of the same nature, they know that in proportion to the length of time a disease, so to speak, has been in process of incubation, so is the length of time that will be required for its effectual cure; and that no chronic morbid state can be cured rapidly without danger to the constitution of the patient. It sometimes happens, however, if we inform a patient, who is probably a stranger, that it will take some months thoroughly to eradicate the cause of his disease, and to allow the reparative powers of his system to work its cure, he may not feel satisfied with this, and may be induced to seek advice elsewhere. There is then the risk that he may meet with an opinion, and be offered a treatment, more in accordance with his desires. The only proper course for the practitioner, under the circumstances, is to tell the patient, in explanation of the opinion given, that it may indeed be easy rapidly to cure his disease to all outward appearance, but that the adoption of such a course may lay the foundations of an incurable malady; while, on the other hand, recourse to a more gradual method will ultimately remove the primary defects which are the causes of the affection of the skin, and not only remove this affection, but prevent others following in its train. By the adoption of such a course, we shall usually find little difficulty in convincing a sensible person of the truth and force of this argument, and of the necessity of being governed by it.

The medicines which as a rule are the most successful in curing affections of the skin in gouty constitutions are alkaline preparations, and of these the most effective is Brandish's alkaline solution. This may be combined with the iodide of potassium, ammonia, and some bitter infusion; and then becomes a form of medicine which is also eminently suitable for the cure of chronic gout when unattended by any cutaneous affection. It is hardly necessary to mention that the effects of the alkali on the system should be carefully watched, and

that the patient should not be allowed to continue its use beyond the time that it is doing good, as it may often become desirable to replace it for a time by the use of mineral acids, when the blood and tissues have become sufficiently saturated with the alkaline remedy.

An alterative pill, composed of a few grains of Plummer's pill; with an equal amount of the compound rhubarb pill, is always a great assistance to the action of alkaline medicines.

An affection of the skin deserving of special notice is the so-called prurigo senilis; since the intolerable itching with which it is attended sometimes drives the unhappy patients to the verge of desperation, and embitters the declining days of their lives. It has long been customary to attribute prurigo to the arrest or imperfect formation of the natural secretions of the skin; but quite lately the view has obtained advocates that it is always due to pediculi, even in persons whose station and habits of life would render it difficult to believe that they could be so infested. Upon this point the practitioner should satisfy himself by careful inspection of the affected region, and if pediculi are discovered, should prescribe some application to destroy them, such as the ointment of ammonia-chloride of mercury. A course of sulphur baths may prove beneficial. If they cannot be found, recourse should be had to the eliminative plan of treatment already suggested for the more ordinary complications of gout. Besides this, temporary relief may sometimes be afforded by the use of a warm or tepid soda bath, containing an ounce of the bicarbonate to each gallon of water. On leaving the bath, the body should be anointed with olive oil which will be rapidly absorbed by the skin.

The ulcerations produced by the chalky deposit often add most seriously to the discomfort of the gouty patient. The deposit itself is found in almost every tissue of the body, but the ulcerations usually only over the prominences of the smaller joints, or on the cartilages of the ears, in which latter situation the urate of soda is liable to be pressed upon during sleep. When an ulceration has once been established, it will seldom or

never heal until, the diathetic condition of the patient has been totally modified by treatment; and under ordinary circumstances, the feeble attempts at healing which now and then take place, are usually interrupted by relapses. If hermetically sealed by a dressing, such an ulcer will appear, when uncovered, as a cavity containing an admixture of thin pus with chalky matter; and, when the supply of urate of soda from the blood diminishes, a few flabby granulations will appear about the circumference. If by judicious, medicinal, and dietetic treatment the gouty depravation of the blood can be totally removed and the formation of urate of soda arrested, the ulcer will then heal beneath any simple dressing; and under any other circumstances it derives but little benefit from treatment. A poultice when it is freely discharging, and some mild stimulant, such as an occasional touch of nitrate of silver, with the daily use of the nitrous oxide of mercury, at periods when the discharge is less, will almost be all that can be done. If the deposits of urate of soda were confined to the external parts of the body, their importance would be limited to the actual inconvenience occasioned; but the same deposits occur in internal structures, where they may place life in serious jeopardy. The arteries of various organs, such as the brain, eye, and ear, the valves and coronary arteries of the heart, and even the aorta itself, are occasionally found encrusted with this deposit from the blood, and so impaired in strength as to be liable to rupture under quite ordinary pressure. The arteries of the upper half of the body appear to be more liable than those of the lower to the deposit of gouty matter; and the arteries of the brain, being less supported by surrounding tissues than those of other parts, are especially liable to give way when thus affected.

It is sometimes very difficult to trace to their true origin the various obscure pains which may be complained of by a gouty patient; a fact which the following case may serve to illustrate:—

A gentleman aged 75, had enjoyed good health throughout the whole of his life. He had been subject

to occasional attacks of gout of a mild character at long intervals, and which did not much interfere with his avocations; and he was very temperate in all his habits. He appeared to be in his usual health when he was seized with a severe pain at the extremity of the middle finger of his right hand. This lasted for many weeks, and he sought the advice of many physicians and surgeons. He seemed in such good health that little medical treatment was recommended for him, and he was advised to apply a piece of wet lint, covered with oiled silk, to the painful member. The pain, however, was persistent, and at last began to disturb his rest at night. His appetite also began to fail, and he complained of a general feeling of malaise and lassitude. The most minute examination failed to elicit any prominent derangement of any organ of his body, and it was solely by taking into consideration his previous history of occasional gout, that the decision was arrived at, that this pain must be of a gouty origin. He was put upon a treatment of mild alteratives with absorbents, his diet was regulated, and at the end of a fortnight he had lost the pain entirely. He continued to enjoy his ordinary health for a year from this time, when he was seized with a most excruciating pain at the epigastrium—the pit of his stomach. On applying for advice, it was noticed that the freshness of his complexion had gone—he was sallow—his tongue was slightly furred, his circulation had become languid, his appetite was trifling, and he could get no rest at night. He began rapidly to lose flesh, and walked with extreme difficulty, he had every outward appearance of suffering from some malignant disease of the stomach, or liver, although the absence of all feeling of sickness was a favourable symptom. His usual weight was fourteen and a half stone, in a few weeks it was reduced to ten and a half stone. His urine was natural in quantity and quality, and devoid of all deposits.

At this gentleman's time of life, his appearance, and rapid loss of flesh and strength, occasioned the greatest anxiety amongst his friends; and the only hope that

could be held out to them as to his ultimate recovery was that, the symptoms he was suffering from *might* be due to some obscure form of gout; which, if so, might be combated. He was once more put on an alterative treatment combined with absorbent medicines.* He was ordered morphia with steel three times a day, and to ensure sleep he took two doses of chloral hydrate and Bromide of Potassium, a scruple of each. The first dose he took at ten o'clock at night, which made him sleep until two or three o'clock, when he repeated it, and slept until seven o'clock in the morning. He continued taking these sedatives for six months, and as his health gradually began to improve so did he find that he could do well on one dose only, which was then reduced to half an one, and ultimately relinquished entirely. When he was sufficiently strong to travel, he was sent to Hastings, where he remained for two months, continuing to employ the same treatment he had done in London. At the end of this time he returned to town, in perfect health, having regained all the weight he had lost.

Among the minor torments of the gouty, a place may perhaps be given to soft corns between the toes, which are often a source of considerable discomfort. These corns are not usually met with until about, or after, the middle of life; and the change from the hard to the soft variety does not escape the notice of those who suffer from them. It is a common belief that corns are the result of undue pressure, from wearing tight-fitting or ill-made shoes; and it cannot be disputed that they do often arise from this cause. They are also found to occur more readily at one time than at another, although the sufferer has made no change in the shape or size of his foot gear. Moreover, they occur in instances when the coverings to the feet are ample and

*R. Quin. Sulph. gr. ij
Ferri Sulph. gr. iss
Morph. Acet. gr. ss
Pil Galb. C. gr. ij
Piper Cayenne gr. ss
Ol. Caryoph gtt. j

Make into two pills, to be
taken three times a day.

as well constructed as possible, so that the simple proximity of one toe to another is at times sufficient to produce them. This depends, I believe, upon an alteration in the tissues, and more especially in the skin itself, from the presence of a gouty element in the blood, which serves to diminish the tonicity and hardness of the dermis, and thus renders it less capable than in health of resisting the action of friction and pressure, however slight they may be. A correction of this vitiated condition of blood will almost always prove successful in relieving a person from the torture and inconvenience arising from corns, whether hard or soft, as confinement to a bed of sickness is known to do; but this latter cure is *believed* to result from the removal of pressure applied to the feet, irrespective altogether of any process of medication to which the individual has been subjected.

I have seen two cases in which ulceration had occurred between the toes, producing so much pain as to prevent the patients from walking. Whether corns had preceded the ulcers I cannot say; but the subjects were people who had suffered not only from gout but also from eczema, which renders it probable that the latter disease may have been the real one. In both cases, the ulcers were speedily cured by placing between the toes pieces of lint, soaked in a mixture of equal parts of *Liquor Plumbi* and *Tincture of Opium*.

The last complications which I propose to make the subject of special notice are those which affect the urinary organs. They are important, not only on account of the suffering they inflict and the danger they occasion, but also because in the gouty they may easily be made the subjects of a treatment too exclusively surgical, which fails to deal with the deeper causes from which they spring. Thus, in cases of calculus depending upon gouty blood, it will be of little avail to relieve the patient by an early lithotrity, if we leave unrelieved and undiminished a vitiation of secretion by which the calculus was produced, and which will surely produce others as time goes on. It will be of little avail to lessen the urgent symptoms of acute or

chronic prostatitis, if we leave unaltered a state of urine that perpetually irritates alike the containing viscus and the channel of discharge. In all urinary disorders, therefore, whatever benefit may be obtained by surgical means, we shall none the less find it necessary to look at the case from the physician's point of view, and to remember that the so-called surgical maladies are only effects springing from causes which it is beyond the range of surgery to remove.

It has been already stated that the gouty urine, especially before or during the paroxysm, is sometimes so irritating as to create urethral scalding or discharge; and the readiness with which it throws down copious deposits would lead us to expect that its solid elements might be separated within the body with corresponding readiness, and that gravel and calculus would be frequent concomitants of gout. Sir Charles Scudamore is of opinion that irritation of the urinary organs and gravel occur immediately before and during the paroxysm rather than in the interval: and, according to his experience, calculus of the bladder is a very unfrequent complaint amongst gouty persons. He says the contrary opinion appears, however, to prevail; and he quotes Sydenham, who, after enumerating the effects of the disease,—“or the pain, lameless, inability to motion of the parts affected, the sickness and other symptoms,” adds, “the gout breeds the stone in the kidneys, in many subjects, either because the patient is obliged to lie long on his back, or because the secretory organs have ceased performing their proper functions; or else, *because the stone is formed from a part of the same morbid matter*; which, however, I do not pretend to determine. But from whatever cause soever this disease proceeds, the patient is sometimes at a loss to know whether the stone or the gout be most severe.”

I have italicized the words in the above quotation from Sydenham, as being illustrative of his penetration in perceiving that the proximate cause of gout and of calculi was probably to be found in a “morbid matter” productive of both forms of disease. Out of five hundred cases, Sir Charles Scudamore found only five

who were affected with vesical calculi, although he met with many severe cases of gravel in connection with gout, and in several of the instances the concretions discharged from the urethra were of considerable size. I think it is a fair inference that his practice was, so to speak, less general than that of Sydenham, and that his patients, when suffering from calculus, must have sought relief elsewhere.

The medical treatment of vesical calculus in the gouty must be addressed to the fulfilment of the various indications for the cure of chronic gout which have already been fully discussed; and must by no means be confined to that routine administration of alkalies for lithic acid concretions, or of mineral acids for phosphatic ones, which was once advised by the chemical school of physicians. All that this practice really accomplished was to produce calculi consisting of concentric layers alternately of lithates and phosphates; and to teach those who reflected upon its results that the human organism is something more than a test-tube into which reagents may be poured with a view to a definite chemical result. It is by restoring the normal character of all secretions, not by the merely chemical modification of any, that the successful treatment of gouty disorders must be achieved.

The diseases of the bladder are comparatively few in number, but they sometimes assume great severity, and are occasionally attended by fatal consequences.

The most severe form is prostatitis—inflammation of the prostate gland, when it is either *acute* or *chronic*. The treatment of these diseases ordinarily falls to the care of the surgeon; and however necessary may be the medical element in the matter, it is indisputable that the aid of the surgeon is most valuable in overcoming the mechanical defects so frequently attendant on these diseases, and that his skill in such instances is of equal importance to that of the physician. The principal features presented by a case of acute prostatitis have already been described; and the treatment required to subdue this form of disease, prior to the occurrence of suppuration, should be strictly antiphlo-

gistic, but always regulated with due regard to the strength of the patient. Leeches should be applied to the perineum, or cupping practised in the same region; cooling saline aperients with diaphoretics should be administered, and Dover's powder, with or without calomel, at bed-time, according to the state of the secretions. The diet should be confined to farinaceous foods. The patient should lie on a horsehair sofa, or sit upon a cane-bottomed chair. If retention of urine be threatened, the hot hip-bath should be used; and if this fails to produce relief, the water should be drawn off by the catheter. When suppuration commences, Sir B. Brodie and Mr. Coulson advise an early external discharge of the matter in order to prevent its bursting into the urethra. The early and free puncture of the perineum down to the gland, even where little or no matter has yet formed, is generally useful by the loss of blood and the removal of the tension of the parts; and if the pus can be evacuated early, if the bladder has not been over-distended, and if the vital powers are well sustained, a favourable though guarded prognosis may generally be ventured upon.

Chronic inflammation of the prostate is sometimes a sequel of the acute form, especially when the inflammation has not been thoroughly subdued, and the gland has remained preternaturally enlarged. It is, however, more commonly associated with a slow and insidious increase in the size of the gland, unattended by any prominent symptom of inflammation; and to this form of disorder persons of the gouty or rheumatic diathesis appear to be most predisposed. The causes that produce this glandular enlargement are not different from those which injuriously affect other glandular structures, and they may often be traced to a depraved condition of blood; but in the case of the prostate, the increase in its volume is augmented by its continuous contact with acrimonious urine. It may also be observed, whenever the blood contains an excess of morbid elements, due to defective oxidization and decarbonization, that an aggravation of the symptoms will occur, presumably from a temporary increase in the size of the gland.

Sir James Paget, in referring to "simple enlargement of the prostate," remarks that "it consists of increased gland cells and muscular fibres, with masses of new-formed tissue within and without the gland. These prostate glandular tumours are composed of simple tissues like those of the gland itself. The gland cells and muscular fibres are not to be distinguished from those of the gland itself. They are masses of new structures, resembling the prostate embedded in the proper substance of the enlarged gland. Near the enlarged prostate similar detached outlying masses of new substance like tumours in their shape and relations, and like prostate gland in tissue, may sometimes be found. A very large specimen was taken from a man sixty-four years old, and who for the last four years of his life was unable to pass his urine without the help of a catheter. He died with bronchitis, and a tumour measuring two and a half inches by one and a half, was found lying loose in the bladder, only connected to it by a pedicle moving on this like a hinge, and when pressed forward obstructing the orifice of the urethra. Both in general aspect and in microscopic structure this tumour is so like a portion of enlarged prostate gland, that I knew no character by which to distinguish them."

Sir Benjamin Brodie remarks that with far advanced age, "the prostate usually, perhaps invariably, becomes enlarged. This change takes place slowly and at first imperceptibly, and the term chronic enlargement is not improperly employed to distinguish it from the inflammatory attacks to which the prostate is liable in early life. It may in some respects be compared with the enlargement of the thyroid gland, known by the name of bronchocele. Like the latter it is generally slow in its progress, and often, after having reached a certain point, it remains stationary for many years, if proper treatment be adopted. It rarely terminates in ulceration or in abscess."

I cannot say that my experience accords with Sir Benjamin Brodie's observation, for I have known great numbers of old men who have lived far beyond the ordinary period of life, and who never manifested any

symptom of prostatic enlargement. It is possible, however, that his practice brought to him a large number of elderly persons so affected, and that hence he felt justified in founding a very general statement upon data that were modified by the opportunities of his position.

The prognosis of chronic inflammation and enlargement of the prostate gland when it is the result of strictures of the urethra may be considered as favourable. Mr. Coulson remarks that, "tumefactions of the prostate gland which are brought on by strictures, disappear when these are cured; it is necessary therefore to distinguish them from more permanent disease." The cases of what may be called idiopathic enlargement must be regarded far less favourably; although life may be greatly prolonged by careful treatment and regimen, more especially if the disease has not been of long continuance, if the constitution of the patient is not reduced, and if there is no structural change in the bladder or kidneys.

When chronic inflammation of the prostate follows partial recovery from an acute attack, the symptoms indicate the propriety of continuing to use a modified degree of the treatment which has already been partially successful.

When the disease is primary, it is often neglected in its early stages, chiefly on account of the absence of pain and the very gradual increase of the inconvenience, the symptoms being occasionally mistaken for those of internal piles, until difficulty of micturition suggests their true meaning. When the gland has become enlarged, the patient experiences a sense of weight and bearing down, and a desire to go to stool, although his rectum is empty; and there is an incessant desire to pass the urine.

The treatment required for chronic inflammation of the prostate is both mechanical and medical. The mechanical treatment implies the use of the catheter, by which the bladder should be thoroughly emptied at regular intervals; and the patient should himself be taught how to use the instrument, an art which a very

little instruction and practice will enable him to acquire. By frequent recourse to the catheter, so long as any difficulty exists in passing urine, the patient will be saved from the pain and spasm, and from those fruitless efforts to relieve himself by which he was previously tormented; and the bladder, when no longer subjected to distension by an acrimonious description of urine, may in time regain much of its power. It will generally be found that a patient can employ the catheter for himself most readily when in a sitting posture, and with the tuberosities of the ischia brought nearly to the edge of the chair.

In addition to the employment of mechanical means, it is of equal importance, by the aid of suitable medical treatment, to put a stop as early as possible to any irritation existing in the bladder; and this may generally be accomplished by paying attention to the state of the urine, and by correcting those defects which, at one time more than another, are found to act as excitants to the bladder, and to create the frequent desire to pass water. In addition, strict attention to diet—the limited use of stimulants, or abstention from them, with the establishment of a rather freer action from the bowels, will in many cases succeed. Should, however, these hygienic remedies fail, recourse must be had to medicines, and those which answer best are of an antacid and soothing nature. I have found the following prescriptions afford great relief:—*R* Tinct. Buchu $\mathfrak{z}\text{i}$. Liq: Potassæ $\mathfrak{m}\text{xv}$. ad \mathfrak{xx} . Liq: Opii Sedativus $\mathfrak{m}\text{v}$. Aq: Aurantii $\mathfrak{z}\text{i}$ Aquæ destillat: ad $\mathfrak{z}\text{iss}$. Fiat haustus, bis vel ter. in die sumendus. *R* Mag. Sulphatis $\mathfrak{z}\text{i}$. Mannæ Opt: $\mathfrak{z}\text{ij}$. Mist: Amygdalæ $\mathfrak{z}\text{iss}$, fiat haustus mane sumendus.

Elderly persons who suffer from irritability of bladder frequently contract a habit of passing water into an urinal when in bed. This practice is most objectionable, as it is impossible for them thoroughly to empty the bladder when in the semi-recumbent posture; a portion of urine will always remain, and this, in certain unhealthy conditions of the secretion, will act as a ferment and become a source of continuous irritation.

When the prostate gland is enlarged, more especially the third lobe, great difficulty is often experienced in completely emptying the bladder; and, as a matter of fact, this is seldom done. The urine then becomes ammoniacal, and often abounds in vibriones. In such cases great relief is afforded by injecting and washing out the bladder with bland unirritating fluids, so as thoroughly to cleanse it from all effete and noxious materials. This may be done after the use of the catheter; nor should the employment of this instrument be laid aside, until the patient is capable of easily passing his water without its assistance.

The mechanical relief afforded by emptying the bladder will not of itself be sufficient to restore the patient to entire comfort; for so long as the urine continues otherwise than normal, permanent relief cannot be expected. It is therefore necessary to go to the root of the malady, and to endeavour to amend the vitiated condition of the solids and fluids of the body. For this purpose the first step will be to correct any errors that exist in the processes of digestion and assimilation; an object that can only be accomplished by the careful study of individual states and peculiarities.

The most common symptoms complained of are acidity of stomach, with heartburn and excessive flatulence. To correct these, the patient has most probably been in the habit of resorting perpetually to alkalies, which, from the (transient) relief they have afforded, he has been induced to regard as curative instead of palliative agents. Alkalies, when taken in excess, add to the already existing debility of the digestive organs. The value of such remedies as soda, potash, and ammonia, depends entirely upon their timely and judicious administration. When properly prescribed, they rank amongst our most valuable therapeutic agents; but if resorted to when the serum of the blood contains an excess of alkalinity, they not only increase this condition, but also promote the formation of an increased amount of acidity in the stomach.

Although alkalies, as a rule, are not to be regarded as curative agents in affections of the bladder when the

urine is ammoniacal, they are nevertheless sometimes required, and prove very valuable, in order to correct the primary error of digestion, and to neutralize an excess of acidity in the stomach which might otherwise be absorbed into the system, and add still more to the distress of the patient. Such acidity usually arises from an error of diet, which is followed by sensations of pain in the region of the epigastrium, or by fulness, flatulence, or one of the many symptoms indicative of imperfect digestion. These may be readily subdued by taking seven or eight grains of bicarbonate of soda, with six of the bicarbonate of potash, in a wineglassful of hot water, to which a small teaspoonful of sal volatile may be added with advantage.

Chronic enlargement of the prostate gland occurs under two opposite conditions of system, which will require, to a certain extent, different methods of treatment. One of these is when the urine contains an excess of acid, the other when it has become phosphatic or ammoniacal.

The diagnosis requires only an examination of the urine by test-paper. If it is found to contain an excess of acid, with or without a deposit of urates, the most suitable remedies to lessen and control an increase in the size of the gland are alkalies.

The liquor potassæ in such cases is one of the most valuable therapeutic agents, and may be advantageously prescribed with small doses of the iodide of potassium.

The bowels should be kept in a gently relaxed condition by the aid of saline aperient waters, taken either warm or cold according to the season of the year, and either with or without a small teaspoonful of sal volatile to correct the flatus which they sometimes occasion. The best kinds of water for this purpose are the Pullna and Friedrichshalle.

One or two teaspoonfuls of Carlsbad salts, dissolved in half a pint of warm or cold water, frequently answers the purpose of maintaining a gentle action of the bowels. All such laxatives should be taken before breakfast.

It will be necessary to ascertain whether any hepatic derangement exists, and if so to correct it; as it is by no means uncommon to discover, in this instance as in many others when any individual gland is affected, that either derangement of the function or enlargement of the substance of the liver has attended or preceded this trophic condition.

As an illustration of this opinion I may mention that I have seen several instances of inflammation or hypertrophy of the testicle, both in persons who had reached the meridian of life and in some who had passed it, which have resisted the ordinary method of cure, and which did not yield until special treatment applicable to the liver had been resorted to.

Great benefit will usually be obtained from the employment of mild alteratives in combination with sedatives and mild laxatives, even when there is no decided evidence of hepatic derangement; the gentle stimulus they communicate to the liver appears to act beneficially upon the whole system. The form of pills I have found to answer best is composed of two grains of hyd. c. creta, four grains of Dover's powder, and four of pil. rhei. comp., to be taken at bedtime.

If the bowels have been properly regulated, these pills will be found greatly to allay the frequent desire to urinate that occurs throughout the night; and should they not prove sufficiently sedative to insure sleep, a dose of the hydrate of chloral may be taken an hour after them.

The infusions of buchu and uva ursi are often very serviceable when there is great irritation of the bladder, coupled with excessive mucous discharge; and to either of these medicines we may add suitable doses of liq. potassæ, or soda, with from ten to fifteen drops of laudanum or liq. opii sedativus, to be taken twice or thrice in the day, according to the urgency of the symptoms.

The diet is a matter that requires careful attention, and should consist of light nourishing food, of a kind that is easy of digestion. All beverages that are fermentable should be avoided, as they have a tendency to increase the amount of acidity already in excess in

the system; but when it is considered advisable to administer stimulants, small quantities of either brandy or whisky should be taken in plain or aërated water. The agreeable and refreshing effects of the different aërated waters when taken in moderation, and the power they exercise in correcting and diluting any preponderance of acid in the stomach, are two well established to require any additional arguments for their use. The different kinds of Vichy and Vals waters, and lithia water also, have obtained a reputation for their medicinal virtues; but one not so well known, the Apollinaris, which is an alkaline carbonate, and is obtained from the valley of the Ahr, near Neuenahr, is equally valuable with any of those mentioned, and surpasses them in being a more agreeable and refreshing beverage.

Whatever conduces to the invigoration of the system will prove instrumental in restoring a more healthful condition of the bladder; and injunctions to temperance in eating and drinking, with an abundance of fresh air, and as much exercise as the patient can take without producing over-fatigue, will constitute the most valuable hygienic precepts.

When enlargement of the prostate gland has continued for a longer or shorter time, attended with dysuria, and with an acid condition of the urine, the latter is found to undergo changes, and to assume an ammoniacal character, attended with a deposit of phosphates. When this is the case, it is always accompanied with great muscular prostration and internal debility. The blood has degenerated into a dyscrastic state, a very common evidence of which is the rapidity with which a trifling blow or bruise is followed by an ecchymosis of the skin. Petechial or purple spots are also frequently observed on the lower extremities.

The treatment required for this condition of urine is to a certain extent the opposite of that found to be beneficial in the former variety; and whereas alkaline remedies are beneficial in correcting the defects resulting from acid urine, they are inadmissible as remedies, excepting under peculiar circumstances,

when the urine is alkaline. They may, however, as has been previously noted, be given when exceptional symptoms are present, but then always with much caution.

The medicines that will prove most efficacious are those which improve the digestive organs, and tend to the production of a more healthy discription of blood. Tonics, such as steel, quinine, and the mineral acids, will be found to be the most serviceable. One of the most valuable of these remedies is the tinct. ferri sesquichloridi, in doses of from ten to fifteen minims, with half-drachm doses of the tinct. hyoscyami, and with or without chloric ether. This combination of medicine is rendered black by the action of the iron on the tannin in the tincture of henbane, but the change in no degree impairs its efficacy. If its astringent taste should be very objectionable, this may be modified by taking it in simple aërated water.

It is requisite to attend to the state of the bowels, which are apt to become confined as a result of the langour pervading the whole system; and the medicines required to overcome this tendency must be left to the discretion of the practitioner, who will prescribe them according to his knowledge of his patient's constitution.

When the urine is alkaline, opiates should be given with much caution, as their effects upon the brain and nervous system are more marked than when the urine is in an acid condition.

If sedatives are required, it is safe to resort to the hydrate of chloral, hyoscyamus, or conium.

The diet should be as nourishing and sustaining as the patient's stomach will bear; and the more generous wines, such as port and burgandy, may be drunk, if they are found to agree.

Stimulants of some kind are generally a necessity in such cases, and serve to sustain the feeble action of the heart, to assist the digestion, and to supply the impoverished nerves with more power. Should it be found that wines do not suit the stomach, recourse may be had to small quantities of spirit, of which the best is whisky, as it is less astringent than brandy and less

diuretic than gin. Before advising this substitution, however, it is necessary to remember how often, in treating diseases of a low type, including gout of the asthenic form, the indications for the employment of a generous wine like port are very manifest; but on suggesting this wine to a patient we are told by him or her that port wine does not agree with them, it turns acid, flushes the face, etc., etc.

That this is the case in numerous instances does not admit of doubt, but why is it? Putting out of the category altogether wines of this class of a spurious character, and assuming that these symptoms have resulted from drinking port wines of unexceptionable purity and age, why should they prove a burden to the stomach? The reason is that they have been bottled too early, before sufficient time had been allowed for the wine to deposit in the wood its salts and feculent matter. Every person acquainted with the nature of port wine is aware that vintage wines require many years before they arrive at maturity and become safe to drink, but, if these wines were allowed to remain longer in the wood they might be drunk, certainly within half of the time earlier than wine which was bottled too soon, and moreover, they would be found to have a decided improvement in their character, both as to flavour and lightness of digestion.

I may say that I discovered by accident the valuable properties of wine which had been allowed to mature in the wood for some years; and since I made the discovery very many persons whom I have recommended to drink such wine have experienced the benefit of it, who previously, although requiring port wine, could not digest it. An advantage to many of no trifling value is, that the price of it is something like one-third less than that of a vintage wine of the same character bottled at an earlier period.

I was dining with one of the members of an old established firm of wine merchants, and was much struck by the excellence of his port wine. It had the chief characteristics of the celebrated vintage of 1834. He told me that his house was celebrated for wine of

that description, and that they always had a large stock on hand. The wine had been retained in the wood for some considerable time previous to being bottled, and was fine in colour and bouquet, and light and easy of digestion.

There is a great prejudice in the present day against port wine, and the gout of our ancestors has been attributed by many to their indulgence in this beverage. Gout, however, is still as prevalent in this generation as it was in the last, notwithstanding port wine has gone out of fashion. Judging from the records that have been left us of the severity of gouty seizures there appears to have been some mitigation in the severity of the attacks in more recent times, but the result does not appear to be different in the shortening of the duration of life.

If, as I contend the use of colchicum as a specific for the treatment of gout produces baneful effects, when injudiciously used, by attenuating the blood and divesting it of its red corpuscles and fibrin, then no wine would be likely to prove so beneficial as a good port, for the purpose of restoring those deficient and essential elements.

Those who suffered from gout in the last generation did not therefore relinquish the habit of taking port wine. When the fit was over they returned to their accustomed beverage, and apparently with advantage. I could mention many instances of extreme longevity in those who pursued this practice. Two or three will be sufficient. The late Lord Eldon drank a bottle of port wine daily, excepting on Sundays when he drank two. In this he was joined by his brother Lord Stowell, four bottles being their Sunday allowance. Both these noblemen lived to over eighty years of age, and they both had gout. The late Mr. Pennington, who died at eighty-five from an accident, until within a year of his death never drank less than a bottle of port wine daily, and frequently more. During the last year of his life he drank only half a bottle. He had attended the late Lord Eldon more than forty years.

I believe one chief cause of port wine falling into disrepute was, and may be frequently now—that the

wine was not considered to be drinkable on the second day after it had been decanted, and therefore they felt it incumbent on them to "finish the bottle." There could not be a greater mistake, as it is in no degree deteriorated any more than sherry, if it is allowed to remain for three or four days after it had been decanted. Perhaps the taste acquired for this particular description of wine, when once indulged in, has prompted a larger consumption of it than of wines of a less seductive kind.

Whether or not wine can be taken in medicinal doses, the ordinary beverage may consist of the juice of lemons in water and sugar, as this vegetable acid will exercise a wholesome influence on the blood. For the same purpose phosphoric acid, largely diluted and sweetened, may often be employed with advantage.

Besides the definite complications which I have endeavoured to describe, it must be remembered that there is no portion of the body which can be said to possess immunity from the morbid effects of gouty blood. Nor can this be considered surprising, when we know that the integrity of all the organs depends on the purity of this fluid, with which they are supplied. Perhaps the two most vitally important are the brain and the heart, and it is by no means uncommon for them to be affected by an excess of gouty poison existing in the blood. The functions of the lungs, stomach, and kidneys are also constantly found to be deranged; but it is when the action of the heart and the integrity of the brain are disturbed that the greatest amount of alarm is manifested by the patient and those around him.

The heart may be affected with violent palpitation, or the regularity of its action may be so deranged that frequent intermissions of the pulse are preceptible at the wrist, and the disturbance of the due flow of the currents of blood from these abnormal states may operate prejudicially on the brain.

On the other hand the heart's action may not appear to be much disturbed when the brain becomes affected, even when the disorder may assume a variety of phases, such as mental hallucinations, or confusion of night with day. In one remarkable case of this kind, the

patient could not be persuaded that it was the sun and not the moon which was shining in mid-day.

It is, however, consolatory to know that it will generally be discovered on examination that the primary organ at fault, when these symptoms are present, is the liver, and that this organ, suffers like the rest from a kind of paralysis due to the depressing nature of the blood with which it and they are supplied. The consequence of this is that, the eliminating function of the liver is for a time suspended, which favours a retention of those noxious elements, gouty and others—in the blood, which it is one of its chief offices to remove. A dose or two of calomel, followed by a brisk catharsis, will usually rectify the errors existing in the heart and head, and will pave the way for other medicines of a corrective kind.

—Graver symptoms than those just referred to, when the heart and head are affected, may present themselves when the liver itself becomes congested. The gravity of these symptoms depends on the failure of elimination consequent upon defective action of this organ, and this is more especially the case when the congestion is unattended with vomiting. Should this symptom exist it points unmistakably to the organ at fault. Should vomiting be absent, the patient may be suddenly seized with extreme prostration of strength, followed by a sensation of extreme coldness of the whole body—the action of the heart becomes more and more feeble, and the pulse scarcely perceptible.

The natural impulse of those around the patient in such circumstances, is to resort to stimulants to restore the heat of the body; should their administration produce sickness, they will prove beneficial, but if not they will only increase the danger. The best stimulant in such cases is that of a mustard emetic, repeated until full vomiting has taken place. The action of vomiting is mechanical, as it *squeezes* the liver and causes the gall-bladder to discharge its contents into the bowels, when warmth immediately ensues. The restoration of the healthy action of the liver must then be attended to.

Vomiting, also, is sometimes of great value in relieving the pain and sensation of dead weight felt in the kidney when stones of small size are lodged at the top of the ureter, which, from the irritation they produce appear to cause contraction of the duct, so as to prevent their passage into the bladder. A medical friend of mine discovered the efficacy of resorting to this method. He was on a visit at a country house, where he had gone for a few days shooting. He was awoke in the middle of the night by a sensation of dull aching pain immediately over his left kidney, he experienced great difficulty in turning his body round. He said he felt greatly at a loss at first to account for the unusual sensation. At last he satisfied himself that it arose from the attempted passage of a calculus. But what was he to do? He was in a strange house—he was totally unprovided with medicine of any kind—and he felt a natural repugnance at disturbing the household at such an hour. He pondered over his difficulty for a short time and at last resolved to try and make himself sick, for he knew that the act of vomiting had the effect of overcoming contraction and occasioning relaxation. Another difficulty then arose, how could he produce sickness without some kind of emetic? He was not possessed of any warm water, so he thought he would resort to cold water. He drank two tumblers full, and then put his finger down his throat. This had the desired effect, and he vomited freely the water he had swallowed. When the vomiting ceased, he was quite free from pain. The following day he passed a small stone.

CHAPTER X.

RHEUMATISM AND THE ALLIED AFFECTIONS

THE relationship between gout and rheumatism on the one hand, and between rheumatism and some disorders of the neuralgic type on the other, is so close and intimate, and the principles on which all these maladies should be treated are so completely the same, that a work on gout would be obviously incomplete if it failed to include some account of the rheumatic affections. They form an order which causes a prodigious amount of sickness and suffering, especially among the industrial classes; and it has been well observed by Dr. Dickson that they make no appearance in the registers of mortality at all adequate to their actual influence upon the community. In my observations upon rheumatism, I have followed the arrangement of its varieties employed by the late Dr. Copland, in his Dictionary of Practical Medicine: and, although this learned and laborious physician has been taken away from us, it is still a fitting tribute to his memory that I should express the obligation I feel to him for his clear, concise, and lucid account of the several forms and complications of this frequently obstinate disease. I have ventured to dispute one or two of Dr. Copland's pathological theories in relation to the cause of rheumatism, but I am fully prepared to coincide with his sound, practical views of the treatment of the malady. Rheumatism was not described by the ancients, either under this name or by any other, to which the

assemblage of symptoms can be traced. Sydenham was the first to treat of it fully, and to distinguish it from gout, with which it had been frequently, if not always, confounded by former writers under the general name of *Arthritis*.

For all practical purposes, the most useful division of the different forms of rheumatism is into acute, sub-acute, and chronic; to one or other of which may be referred all the forms which occur in various tissues of the body, and which have been described as *capsular*, *muscular*, *periosteal*, *neuralgic*, and by many other names.

Acute rheumatism, or *rheumatic fever*, is generally ushered in by rigors, or shiverings, or chilliness, followed by increased heat, and the usual febrile symptoms attendant on an inflammatory condition. Severe pains are felt in the limbs, chiefly in the joints or tendinous sheaths, and sometimes extending in the course of the muscles, the patient frequently complaining of a diffused feeling of soreness throughout the latter tissues, describing his sensations as if he had "been bruised or beaten all over."

When febrile action is established, the tongue becomes furred or loaded; thirst urgent; the pulse quick, bounding, and full; the bowels confined; the skin hot, at first dry, but afterwards perspiring freely; the urine scanty, high-coloured, depositing no sediment, and very acid; the appetite impaired, and sleep prevented by the aggravation of the pain during the nocturnal exacerbation of the fever. Generally the pain is confined to the large joints, as the knees, ankles, elbows and shoulders. The acute pain is often followed by increased heat, and sometimes by an erythematous blush of inflammation, but more generally by enlargement, rendering the joints fuller, rounder, and manifestly swollen. The swelling is owing either to serous effusion and capillary fulness of the cellular tissue external to the fibro-serous tissues of the joints, the chief cause of it in acute rheumatism; or, more rarely, to serous effusion within the cavity of the joints, which more frequently occurs in the sub-acute form of the complaint.

Neither the redness nor the swelling is followed by suppuration unless in a cachectic or scrofulous habit of body; and even then not until erosion of the cartilages of the affected joint takes place, an event most probably produced by changes in the fluid effused into the cavity during low grades of vital power or reaction.

All the febrile symptoms, and even the pain itself, manifest more or less of a *remittent* character.

The pulse varies from 84 to 100 during the day; but generally rises to 96 or even to 112 during the night. The veins are generally full, and blood taken from them furnishes a firm coagulum, covered by a firm, thick, buffy coat, which, by its contraction from the circumference, renders the upper surface of the coagulum more or less cupped. This state of the blood continues, notwithstanding the frequent repetition of bloodletting, but the coagulum then becomes smaller in relation to the amount of serum.

The secretions are all impaired or changed at the commencement; the mouth becomes clammy and dry, the tongue loaded with fur, and great thirst is experienced, especially at night. The urine continues scanty and high-coloured until the febrile action begins to subside, when it deposits a copious sediment of a brownish-red colour, resembling brickdust. The perspiration that succeeds to the dry state of skin affords no relief to the pain. This exudation is peculiar in its nature, being frequently offensive, unctuous, and emitting a peculiar acid odour.

These symptoms usually continue for fourteen days, and even longer, when some mitigation of their intensity may be expected to occur. The frequency of the pulse and the acuteness of the other symptoms will subside; the urine will be more abundant, paler, and more turbid on cooling; but the perspiration will often continue unctuous and offensive, and more or less profuse. If the stools now assume a more healthy appearance, and give evidence of a natural and sufficient biliary secretion, and if the urine and perspiration gradually return to their normal state, the nightly febrile exacerbations will also subside, and the patient will be restored to

health after a period of convalescence chiefly characterized by general debility. But these favourable changes are sometimes arrested in their progress. If the amendment stops half-way, if the tongue continues loaded or furred, the urine acid and scanty, the perspiration offensive, and the pulse frequent, this state will generally pass into the *sub-acute* or *chronic* form of the disease, or into both in succession, and in either case may continue for an indefinite time.

Besides the affection of the joints, acute rheumatism is liable to attack more important organs. The heart and the brain are both invested by fibrous membranes, and the pericardium and the dura mater are both liable to be implicated. When the former becomes the seat of acute inflammation, this often leads to the effusion of lymph, which glues the lining membrane of the pericardium to the surface of the heart, or of serum, which widely separates them; in both cases great mechanical impediment being the result. Or the endocardium may become inflamed, and its prolongations covering the valves the seat of fibrinous deposits. Sometimes the two forms of inflammation may coexist; and they may even spread to and affect the muscular structure itself. Unless very prompt remedies are employed at the outset of any of these forms of cardiac complication, it is rare to find, even if the patient should recover, that the organic structure of the heart has escaped some serious change, of which valvular disease and consecutive hypertrophy are ordinary results.

When the brain, or, more correctly speaking, the dura mater, becomes rheumatically congested or inflamed, the interruption to the discharge of the cerebral functions is analogous to that of the functions of the heart when the pericardium is similarly affected. The dura mater exudes lymph or serum in the same manner as the pericardium, and may become adherent to the pia mater beneath. Delirium of a more or less acute form usually supervenes; and, unless relief is afforded, copious effusion may take place, and may be productive of fatal coma.

The belief of our ancestors, that rheumatism was a result of some morbid element existing in the blood, from whence the name of the disease was derived—*ῥεῦμα*, a defluxion, catarrh,—is characteristic of the pathological views that were formerly entertained, and that modern experience has tended to corroborate rather than to subvert, notwithstanding the long-continued opposition that was shown to the doctrines of the humoral pathology. The discoveries of animal chemistry are gradually causing us to drift back, more or less to those hypotheses which referred the majority of diseases to some imperfection existing in the “humours of the body;” and although we are not prepared to receive the doctrine of noxious “spirits” pervading the system, we do not fail to recognise what this doctrine was intended to convey when the nervous system was affected. Gout and rheumatism may be taken as typical examples of diseases that corroborate the former of these views; and hypochondriasis the latter.

The question what is rheumatism? has not up to this time been answered satisfactorily. Dr. Prout believed that it was due to an excess of lactic acid existing throughout the tissues; and Mr. Simon and Dr. B. W. Richardson have proved by experiments that the injection into the system of this particular acid will produce symptoms of cardiac inflammation resembling rheumatic endo- and peri-carditis. Dr. Garrod has failed to detect any morbid principle in the serum of the blood to explain the occurrence of rheumatism, and remarks, at p. 546 in his work on gout, “In several instances I have sought in vain for uric acid in the blood serum, and have generally found an absence of any specific alteration in the urine.”

The opinion is entertained by many, that excess of fibrin in the blood is a constant antecedent to an attack of rheumatic fever, and that the disease is in great measure due to this cause. It seems hardly possible to arrive at any satisfactory conclusion on this point, unless we are able to fix some definite standard of what constitutes excess. It seems probable that the physiological amount of fibrin may vary within rather wide limits,

not only in different individuals, but also in the same individual at different times, and under different conditions of diet and exercise. We observe the most severe attacks of rheumatic fever in persons of robust habit, and these attacks are generally preceded by a chill, or undue exposure to malign atmospherical influences, to which the patient generally attributes the accession of his malady. We also find that the severest paroxysms of gout are witnessed in those in whom we have reason to suspect a plethora of a rich description of blood; but whether in either case the blood contains more than its normal amount of fibrin is a question which we have no means of determining. It is, however, more than probable that science will one day teach that rheumatism and many other diseases derive their origin from some changes in the fibrin and more solid constituents of the blood.

Those medical men who practised during the period when blood-letting was resorted to for the cure of many diseases,—and in none more frequently and copiously than in rheumatic fever,—are aware of the constant appearance of a “buffy coat,” as it is termed, on the surface of the cooled blood. This appearance was regarded as positive evidence of the existence of inflammation; and I have seen persons who underwent repeated bleedings on account of it, until they were bled within an inch of their lives, the clot or coagulum becoming smaller and smaller after each abstraction of blood, but still retaining the chamois leather covering.

In the more subdued forms of rheumatic fever the same characteristic yellow coating was observable on the surface of the coagulum, but it was noticed that the buffy coat was paler in colour, less dense in texture, and its surface less “cupped.”

Dr. Bence Jones, in speaking of tubular nephritis, calls attention to one of the especial causes of this disease, which will equally explain many others that are dependent for their existence upon the stoppage of the excreting functions of eliminating organs—the elements which it is their province to separate from the blood being cast back upon it, or retained within it, and acting

more or less as poisonous agents upon the body. He says, "Of all the causes that affect the tubes of the kidneys cold is the most striking. The sudden stoppage of the removal by the skin of water, salts, lactic and hidrotic acids, urea, and probably a multitude of other substances immediately causes an accumulation of these or their parent substances in the blood. No sooner does this occur, than on every mucous membrane and in the lymph that diffuses into every structure these substances are poured out. The greater part of the skin excretion must temporarily pass off by the kidneys or bowels. Hence increased chemical and mechanical action, increased flow of blood, increased oxidation; and if this becomes excessive, obstruction occurs; then follow altered oxidation and altered nutrition, whilst albumen, epithelium, fibrinous caste, and blood globules are thrown out in the urine. *The substances, or their parents that the cortical structure should secrete, are left behind in the blood*, and from it they pass with the lymph into the structures, according to their powers of diffusion."

The late Dr. Todd, in his Croonian Lectures, says: "It is no wonder that as lactic acid is imperfectly excreted through its natural channels, in consequence of the influence of cold in checking perspiration, and is too freely developed in the alimentary canal, it should accumulate in the blood, and become eliminated at every point. Moreover, the long continuance of the causes which produce the defective cutaneous secretion and the deranged gastric one, will give rise to the development of lactic acid in the secondary processes of assimilation, thus infecting the blood from every source, and tending to perpetuate the diathesis."

Dr. Willoughby Francis Wade, in a very clever practical treatise on Rheumatic Fever, 1864, remarks: "Attempts have been made to determine the exact nature of the *materies morbi rheumatici*. Lithic acid, lactic acid, and an undue proportion of fibrin in the blood—hyperinosis, as it is termed—have each been claimants for this bad preëminence. It is not necessary to occupy time in discussing their respective titles to this position, inasmuch as the question of the exact

nature of the rheumatic poison, *if such there be*, is still, in my opinion, an open one, upon which I have no new data nor any suggestions to offer."

Dr. Fuller, in his excellent and exhaustive treatise on Rheumatism and Rheumatic Gout, remarks: "Thus it would appear that cold and other external agencies are only predisposing and exciting causes of rheumatism, and that the primary, proximate, or essential cause of the disease, is the presence of a morbid matter in the blood, generated in the system as the product of a peculiar form of malassimilation, of vicious metamorphic action. This poison it is which excites the fever and produces all the pains and local inflammations which are often found associated in an attack of rheumatism."

Without entering into a speculative discussion about the exact nature of the morbid material which produces rheumatism, we are sensible of one important and abiding indication that is always more or less present when rheumatic fever prevails, which is frequently revealed to us by our sense of smell, and, failing that, is recognised in the urine: namely, an excess of acid of some description, pervading nearly all the secretions of the body.

Dr. Prout refers to the difficulty of determining the presence of one acid in the stomach rather than of another, but expresses an opinion that the predominance of muriatic acid seems to denote a general phlogistic or inflammatory state of the system, while the predominance of the lactic acid marks rather a state of irritation. In the stomachs of plethoric gouty persons the muriatic acid prevails, and the lactic acid in the weak, the delicate, and the nervous. He remarks that the whole intestinal canal, with the exception of the cæcum, is probably neutral, or that it occasionally verges towards slight acidity on the one hand, and slight alkalescence on the other.

Dr. Prout supposes that the muriatic acid developed in the stomach is derived from the muriate of soda existing in the blood; and it is probable that when the liver does its duty, the greater part of the free muriatic

acid of the chyme, when it enters the duodenum, is neutralized by the soda of the bile. The case, however, appears to be very different with the lactic acid, particularly when in great excess; for as much as this excess of lactic acid is usually generated, of course there can be no equivalent of alkali in the duodenum to neutralize it. The consequence is, that the free acid is either taken up with the chyle into the lacteals, or descends into the intestines, where, in conjunction with other acids there developed or separated, it produces various secondary symptoms.

These opinions of Dr. Prout's will, I think, afford us as good an insight into the cause of rheumatism as any we can hope to obtain about a subject so obscure. The reference he makes to the liver doing its duty so as to prevent the occurrence of those morbid changes that terminate in defective action and create disease, is a very valuable suggestion, and entirely harmonizes with my own opinion, which has been derived from close observation, that on the functional derangements of this organ the remote causes as well of rheumatism as of gout depend; and that the safest and surest means of overcoming these diseases is to restore the liver to its integrity as speedily as possible.

When the liver fails to remove from the blood those materials which it is its peculiar province to excrete, there will no longer be a free discharge of healthy bile into the intestines; the bowels at once become confined, and thus the most important outlet of the body fails to act efficiently as the chief depurator of the system. Under these circumstances the kidneys are constantly observed to take on a compensating or vicarious action, and for a time they secrete largely a morbid description of urine; a perversion of function which often leads to organic changes of their structure.

Any doubt that may exist with regard to the influence of the liver as the chief source of rheumatism, may be set at rest by the treatment adopted and recommended by those medical men who have been most successful in its management, and who have mostly relied upon calomel to stimulate the peccant organ to a

more energetic performance of its functions. Such an action, however, does not exhaust the effect of this remedy, which is also the most powerful agent we possess for preventing and for removing inflammatory deposits of lymph.

Dr. Wade observes, page 8, "We know that in other active febrile disorders a purge containing calomel relieves the systemic irritation in a marked degree. Besides, one of the commonest precursors of rheumatic fever is a yellowness of the sclerotics, which, as well as the irregular state of the bowels and unhealthy character of the motions, indicates the desirability of acting on the hepatic system." I have not forgotten that some recent experimentalists have found reasons for concluding that calomel is inoperative upon the liver. But the truth is, that the propriety of such treatment would be in no way impugned were their views to be established in the most irrefutable manner.

The case stands thus: experience has shown that a certain assemblage of symptoms is relieved by a certain system of therapeutics. If it were shown that the principles upon which these drugs had been heretofore administered were baseless, it would certainly become desirable to show in what way the beneficial effect was produced, but it would not depreciate the facts which experience had discovered. This plan, indeed, has been adopted to the exclusion of all other medication. Dr. Chambers, who was a skilful as well as a fashionable practitioner, was in the habit of prescribing ten grains of calomel every night, and a draught of salts and senna the following morning, as Dr. Latham informs us, with much success.

Dr. Latham points out that Dr. Chambers' method is styled "the purgative plan," yet its purpose is achieved by calomel and purgatives conjointly. "The purgatives," he says, "would not answer the end without the calomel; of that I am quite certain. Neither would the calomel answer without the purgatives, unless it produced of itself ample evacuations from the bowels. It is probable, in short, that the remedial efficacy of the plan resides essentially in the calomel, however, not as *mercury*, but as itself—calomel."

Dr. Wade observes, "But it often happens that a patient has taken a quantity of purgative medicine before we are called to see him. I am so convinced of the efficacy of the calomel that even under these circumstances, I still administer it; but instead of combining it with a purgative, I add ten or fifteen grains of Dover's powder, which acts as a calmative, and promotes perspiration, without diminishing, even if it does not promote, the beneficial effects of the calomel."

Dr. Wade was in the habit of prescribing at the onset of rheumatic fever, a dose of calomel of from ten to fifteen grains in combination with from forty to sixty grains of the compound powder of jalap.

Dr. Fuller also relies upon calomel in nightly doses of from three to five grains, combining it, according to circumstances, with the acetic extract of colchicum, ipecacuanha, tartar emetic, and aloes, and occasionally with opium; following these remedies by a saline aperient in the morning.

The practice I have generally found to answer in the treatment of rheumatic fever, is to limit the quantity of calomel to a nightly dose of two grains, combined with an equal amount of true James' powder, colocynth, and henbane, in addition to saline and alkaline mixtures in which calcined magnesia, and frequently the sulphate of magnesia, have constituted the ingredients.

The advantage of giving calomel only in a small dose is, that it can be safely repeated for several nights without producing any injurious effect. It thus maintains an uniform stimulating effect upon the liver and other glandular structures, and so greatly promotes the elimination of morbid materials.

The method has also another advantage, which is, that when it has been pursued, it is extremely rare to meet with a relapse of the disease.

The cases that demand a more energetic employment of calomel, are those in which the heart participates in the affection; but, even in those, it is not necessary to employ very large doses. We may obtain the beneficial effects of this remedy, and avoid the hurtful ones, by the administration of a grain and a half, or two

grains, every four or six hours, combined with true James' powder and extract of henbane, or with Dover's powder, according to the circumstances of the case.

I entirely concur with Dr. Fuller in the views he entertains of the cause of heart disease in acute rheumatism. The morbid materials in the blood of a rheumatic patient produce an effect on the heart analogous to the disorder of the joints; and this complication chiefly occurs in persons of strong constitution, in whom the symptoms of fever are much developed.

I have also been led to the conclusion that in those cases there commonly exists an unusual amount of hepatic derangement. Dr. Fuller does not allude to this point, but it is nevertheless one of great importance; and his treatment, which is marked by a judicious use of remedies calculated to restore the natural action of the liver, fully confirms my view. The following case will serve to illustrate the advantage of the administration of small doses of calomel in rheumatic fever attended with cardiac complication.

A boy, aged twelve, of delicate constitution, whose father suffered from gout, caught cold at cricket during an easterly wind. For the first three days he complained of sore throat and difficulty in swallowing, which arose from an enlargement of his tonsils. In the course of a few days these symptoms disappeared, and he returned to school. After the lapse of four or five days, he complained of violent pain in his left leg. This pain soon attacked the right leg also, and rendered him incapable of walking. A medical man, Mr. Holman, was sent for, and prescribed a calomel pill at night, with a mixture containing colchicum and laudanum, to be taken every four hours. After the second dose of the mixture, at 9 a.m., the boy was seized with extreme difficulty in breathing. He complained of great pain over the region of the heart. A linseed and mustard poultice was applied, and this, after a time, gave him relief.

At one o'clock on the 14th May, 1869, I met Mr. Holman in consultation. The boy's breathing had

then become comparatively easy; his pulse was small, tongue slightly furred at the back, complexion pale, but yellow around the under lip and chin. His knees and ankles were red and swollen, and he could not move them without great pain. He still complained of pain over the region of the heart. It was with some difficulty that he was made to sit up in bed for the purpose of examination. He had a poultice over the front of his chest, which made it necessary to examine it at the back, where a distinct friction sound was audible. This Mr. Holman had detected at the onset of the seizure. He was ordered a repetition of the calomel pill, an alkaline mixture, and a blister to be applied over the heart.

The following day, the 15th, we found that he was somewhat better; the blister had drawn well, the pain had considerably diminished, but the friction sound remained, and he was incapable of taking a deep breath without severe coughing. Pulse 70; urine loaded with lithates. He was ordered to continue the alkaline mixture, and to repeat the calomel and colocynth at night.

On the 16th, at ten in the morning, he was not so well, having had a restless night. The pain in his left side still continued, and his breathing was short and oppressed. His pulse was 105; urine greatly loaded with lithates, and his tongue covered with a whitish fur (the tongue of irritation.) The pills of the preceding night had not acted, his abdomen was distended and hard, and he complained of pain when slight pressure was made over the right hypochondrium. He was ordered a warm saline aperient, and, when it had operated, to commence with the following pills:—Hydr. chloridi. gr. i., Pulv. Jacobi ver. gr. i., Ext. hyoscyami gr. i.; ft. pilula; sumt. i. 6ta quaque hora. He was also ordered an alkaline effervescing mixture containing spirit. eth. nitrici, ammonia, and iodide of potash; the first dose of which made him sick, and it was discontinued. The friction sound had increased in intensity, and in the extent over which it was audible.

May 17th. He had passed a quite night, and perspired profusely. In the morning he said he felt quite

well. The urine, which had been scanty, was more abundant, and less loaded. His bowels had acted freely, and his tongue had undergone a change, presenting a cake of yellow-ochre coloured fur on its dorsum. His pulse was 90. He could not yet take a deep breath, and an attempt to do so made him cough. The friction sound still continued, but was diminished both in extent and force. He was directed to continue the pill every six hours, and to take a draught containing sesquicarbonate of soda, sweet spirits of nitre, and aromatic spirit of ammonia one hour after each pill. As, however, he had experienced some griping from the pills, a slight change was made in them:—℞ Hydr. chloridi gr. i., Pulv. Doveri gr. ii; ft. pil.

May 18th. Improved in every respect; feels very hungry; friction sound much diminished.

May 19th. No friction or other abnormal sound to be detected. As his tongue still retained the cake of yellow fur on its dorsum, he was ordered to continue the pills every eight hours. His urine still abounds in lithates. He can now take a much deeper breath without producing cough. Diet: bread and milk twice a day; rice pudding for dinner.

May 20. Decidedly better; no friction sound perceptible; pulse soft, but slightly irregular; has had no pain in his joints or limbs for two days; urine less loaded. To continue the same treatment.

May 21. Better in every respect. Ordered to omit the calomel pills, and to take the following every night instead:—℞ Pil. hydrarg. gr. i., Pulv. Doveri gr. ii., Pil rhei. co. gr, iii.; ft. pil. duæ; and to continue with the same mixture.

May 22 23. Steadily improving. Urine natural, appetite keen, tongue clean.

May 24. Ordered him a quinine mixture, which he took until the 29th, when his urine was found to contain a large quantity of lithic acid gravel, and he complained a good deal of cutaneous irritation. The following mixture was therefore substituted for the quinine:—℞ Liq. potassæ ℥ x., Spirit. ammon. arom. ℥ xv., Mistæ. aurantii ʒi., Inf. sennæ co. ʒi. Syr.

aurantii \mathfrak{z} i., Aqua ad \mathfrak{z} iss.; ft. haustus bis in die sumendus; and to continue with his pills at bed time.

He had taken a dessert-spoonful of wine with his dinner for the three preceding days, which may probably account for the generation of the excess of acid. The heart sounds were quite natural, and the breathing was perfect; the pulse 60 and full. He "felt weak" on his legs. He was sent to the seaside, and very soon gained more than his ordinary amount of health, which has continued unbroken to this time.

A variety of medicines have from time to time found advocates as specifics for the cure of rheumatic fever. Perhaps the best commentary upon their respective claims to consideration is that furnished by the proposals of Sir W. Gull and of the late Dr. Sibson, to leave the patients wholly without medical treatment, and to trust entirely to warmth, rest, and good nursing. Such a practice, so long as we possess in drugs the means of modifying and controlling vital processes, seems to me to be as unsound in ethics as in science. Even if we admit that a patient of robust constitution, placed under favourable circumstances, would sooner or later throw off the disease, it is none the less manifest that we may intervene with advantage to assist a natural process. And if, as often happens at the outset of an attack, the natural emunctories are congested, torpid, or otherwise incapable of responding to the sudden call made upon them, it is equally manifest, that by restoring them to activity we may facilitate, or even initiate, the escape of the *materies morbi*, and greatly lessen the probability of the disease extending to the heart. It is by the light of this contingency, indeed, that all plans for the treatment of acute rheumatism should be tested. During every day that the disease continues without mitigation, the heart is exposed to peril; and we know only too well that, if once implicated, it seldom recovers. Among the comparatively few instances of supposed recovery, many are apparent and fallacious. In a very large proportion of cases of cardiac complication, the disease leaves behind the seeds of fatal mischief; and the resulting troubles

terminate either in dropsy and lingering death, or in a more sudden manner, as the result of some exertion or mental emotion. I therefore hold it to be our plain duty to employ against acute rheumatism all the resources of our art; for even if the utmost we could do were to shorten the duration of the disease by a single day, that day would not only be so much taken from the patient's sufferings, but also so much taken from his risks. With regard to the ethics of the question, it is easy to apply a homely and simple test. To look on at natural efforts of repair, without endeavouring to assist them, is not the course by which our profession has won, or by which if it were understood, its individual members could retain, the respect and confidence of the public.

With a view to the promotion of that cutaneous excretion which is plainly a natural channel of escape for the rheumatic poison, some physicians have advocated the encouragement of diaphoresis by loading the patient with blankets and other bed-clothing. Such a practice requires the greatest circumspection, and is often followed by disastrous results. It has the immediate effect of directly increasing the action of the heart, and of increasing in the same proportion its liability to be attacked by the disease. It will be found a better and safer practice to preserve only such a degree of external warmth as may conduce to comfort; and in doing this the practitioner must be guided by the season of the year, as well as by the sensations of the patient.

The so called alkaline treatment of acute rheumatism, first introduced by Dr. Fuller, and since then variously modified by others, is a plan that rests upon a sound basis, but that may easily be pushed to excess. There can be no doubt that the natural alkalinity of the blood must be heavily drawn upon during the progress of the disease, and that the unusual waste may with advantage be replaced by an unusual supply. But I doubt the propriety of rendering the urine alkaline by medicines. To do this is but to call upon the kidneys, already heavily taxed, to remove the excess of soda or potash that is constantly poured into the stomach; and it is quite possible that doing this may interfere with them in the

elimination of the products of disease. The liquor ammoniæ acetatis, with a little excess of ammonia, and in combination with calcined magnesia, will usually be found to produce a beneficial effect. The magnesia, from its insolubility, exerts a more powerful influence in correcting acidity than any other alkaline substance, as a considerable portion of it will pass throughout the whole extent of the alimentary canal. Potash, soda, and ammonia, employed in moderation and judiciously, are valuable aids to treatment, and the expressed juice of lemons in the form of lemonade will usually be the most grateful beverage.

The employment of sedatives may be demanded either to relieve the intensity of pain, or to quiet the action of the heart. For the former purpose nothing will be found so effectual, and so free from any objectionable consequence, such as the arrest of secretion, as the hypodermic injection of a solution of morphia. It will usually be found the best course to repeat this every night, in a sufficient dose to insure sound and refreshing sleep; and it would be worthy of trial whether the administration at the same time of chloral by the mouth would not render the sleep more speedy and more prolonged than the employment of either agent singly. The place of puncture for the injection is absolutely unimportant as regards the sedative effect, and it is only desirable to select a spot, such as the inner side of the thigh, that is easily accessible, where the skin is of a low degree of sensitiveness, and where there is an abundance of subcutaneous cellular tissue. It is also worth while to use Dr. Buzzard's improved syringe, which has a sharp trocar point, and a lateral opening, somewhat higher up, through which the fluid passes. When we need the influence of a sedative, not on account of pain, but to quiet a rapid and jerking action of the heart, attended with a hard pulse, and manifestly placing the organ itself in a state of increased danger, there is no medicine so useful as aconite for those who know its powers, and the nicety with which it can be controlled, as well as the care with which it should be watched. A single full dose may first be given (for an

adult, fifteen minims of the British Pharmacopœia tincture), and its effect observed. If it does not reduce the pulse within an hour, a second smaller dose should be given, and so on. As soon as the rapidity of the pulse is decidedly and sufficiently subdued, the medicine may be laid aside until the pulse once more begins to rise, when a small dose may be given to maintain the effect. In this way it will often be possible to tide over a period of impending danger, and to gain time for the action of eliminative remedies. American writers have claimed a similar power over the heart for the *Veratrum viride*, but of this I have no experience.

Since the 1st edition of this book appeared, a new and very valuable agent for the cure of rheumatic fever, Salicin, has been discovered and introduced by Dr. Maclagan.

Dr. Maclagan has written a most interesting and exhaustive treatise on this subject. By the numerous cases he has recorded, he has clearly demonstrated the efficacy of this drug in controlling and curing rheumatic fever in a comparatively short space of time, when compared with that which is required in other methods of treatment. Dr. Maclagan's method consists in giving thirty grains of Salicin every second or third hour, until the pain and fever have subsided, when he prolongs the intervals between the doses, but urges the continuance of the medicine for some days after these symptoms have disappeared.

Dr. Maclagan does not speak highly of the salts of Salicin, but prefers the pure drug.

He contends that he has never seen it affect the heart or the brain, even when given in large doses. Should any toxic signs appear, as singing in the ears, the medicine may be omitted for a time. Dr. Maclagan has not found that Salicin exercises any control over the chronic forms of rheumatism.

The diet should consist of liquid nutriment—beef tea, arrowroot, and jelly; and when the patients have been in the habit of living freely, a tablespoonful of brandy or whisky may be given in a little water three times a day.

Various remedies have at different times been used for affording relief to the pain and inflammation of the joints; the simplest and most common being to swathe the affected parts in medicated or carded cotton wool, surrounding this with a covering of oiled silk. This practice affords great relief to the patient, owing to the copious sudation that it occasions; and is free from the risks of overmuch general covering.

Alkaline and opiate applications were strongly commended by Dr. Fuller; and his favourite formula was the following: Potassa carb. \mathfrak{z} i. Liq. opii sedativ. \mathfrak{z} vi., Aqua rosæ \mathfrak{z} ix., and he occasionally substitutes a decoction of poppies for the liquor opii and rose-water.

Mention has already been made of the advantage to be derived from the application of strong spirit to the inflamed joints, and it is well worthy of more extended trial. Amongst the advantages attending its use are, that it is a clean and ready remedy.

Dr. Herbert Davies introduced a method of treating acute rheumatism by the application of numerous blisters; and he has from time to time published most interesting accounts of the results in many cases, the majority of which have been under his own superintendence. He states that,—

1. The blister treatment, if adopted early, when the local symptoms are most marked, and the constitutional disturbance most evident, and before any physical signs of endo- or peri- carditis are developed, undoubtedly, in a large majority of cases, saves the heart from inflammatory mischief.

2. Relief to the local pains is rapidly and permanently obtained.

3. The constitutional effects are speedily manifested in—

- (a) The fall of the temperature of the body, as measured by the heat in the axilla.

- (b) The diminution in the rapidity of the pulse.

- (c) The altered reaction of the urine.

4. Convalescence from the disease is soon established, as shown by the early return of the appetite and strength.

5. The mode of treatment, though bold, energetic, and decisive, is not remarkably painful, or to be dreaded, as proved by the evidence of the patients who have been subjected to the plan.

Dr. Davies refers to a report published by Mr. Heckford, late house surgeon of the London hospital, of seventy cases admitted within eight months, in which no fewer than thirty-one were affected with some form of cardiac mischief. In eight of these thirty-one cases, the diseased condition was probably the result of previous attacks, seventeen were recent cases, and commenced before admission, and six cases developed themselves while the patients were under the mild alkaline treatment of gr. xv, of bicarbonate of potass every four hours.

Dr. Davies also refers to a statement made by Sir Thomas Watson, in his Lectures, who says, "of those who suffer from acute rheumatism, not less than two-thirds suffer from some form of cardiac inflammation;" and looking at the cases which he (Dr. Davies) brings forward, he finds that of the fifty cases of rheumatic fever, twenty-seven were admitted with *morbus cordis*, and twenty-three were free from that affection; *i. e.*, before they came under the blister treatment, more than one-half of the fifty cases had hearts already damaged by old or recent inflammation. As many as twenty-five out of the fifty cases when discharged were totally free from any endo- or peri- cardial mischief; or in other words, while every heart was saved which came in free from disease, two recent cases of cardiac inflammation were apparently cured by the alteration effected in the blood by the free withdrawal of the serum from the poisoned joints.

To obtain such results it was found that the cases must be treated early, and every affected joint, or rather its proximity, must be simultaneously blistered; and, as the result of his experience, Dr. Davies learnt that those cases answered best to the treatment where a great number of joints had been simultaneously affected, and where by the establishment of a large discharging surface, the major part of the poison could be removed at one stroke.

It appears from Dr. Davies' observation, that it is in the *acute* form of rheumatism that the blister treatment answers best, for he says, "Cases where the poison would seem to crop up to the surface by instalments, and to attack a joint or two at some interval of days, do not exhibit the value of the blister plan so well as those instances of the disease which appear to be more severe, but are really more manageable examples of the complaint."

Dr. Davies admits that peri- or endo- carditis, may, will, and has become developed while the blisters were on the patient; but he considers that such cases prove no failure of the plan, as many hours are required for the blister to rise and the serum to be withdrawn; and of course those instances where cardiac mischief has been developed *before* local inflammation has manifested itself, come under the same category. Fortunately, instances of the latter kind are very rare, as the rheumatic virus usually attacks the outworks of the body before it invests and penetrates the citadel—the heart.

In referring to the relief afforded to the pains, Dr. Davies describes it as rapid and permanent, and highly conducive to sleep. One patient said he infinitely preferred blisters to the pain of rheumatic fever; another, that he would rather have forty blisters than undergo the agony of rheumatic fever; and it was no uncommon thing for patients to ask for additional blisters whenever an additional joint became the seat of inflammation.

The temperature of the body falls rapidly with the establishment of a free discharge from the close proximity of the inflamed joints. A reduction of 2° in the heat of the whole mass of the blood is the actual result of the local application. With the blood thus cooled and deprived of an irritating *materies morbi*, we can readily see that,—

The pulse would fall in frequency and force, and that the heart, rapidly losing its morbid excitability, would be less likely in the progress of the case to become the subject of inflammation.

It was repeatedly noticed how the temperature in the axilla, and the force and frequency of the pulse, rose, whenever a fresh joint became attacked, *i. e.* the seat of a new supply of *materies morbi*, and how soon all these symptoms subsided with the application of the blisters.

The constitutional effects of the blister treatment were also shown in the altered re-action of the urine of the fifty cases. The urine in—

Eleven cases remained acid, though diminished in intensity, during the whole period of treatment.

Twenty-two became neutral shortly after the serum was discharged.

Ten became alkaline.

Seven Dr. Davies had no notes of, as the cases were not under his own observation.

Dr. Davies informs us that convalescence was in the majority of instances very early, as shown by the return of appetite and strength.

Dr. Davies disputes the efficacy of the alkaline treatment in correcting the peculiar *materies morbi* in the blood which is productive of acute rheumatism, and observes, "I am convinced that while this mode of combating acute rheumatism has often, *after a time*, cured the disease, it has usually left the patient weak and anæmic for months afterwards. He is also of opinion that alkalies cannot come in contact with the *materies morbi*, but that they most probably pass out by the kidneys, rendering the urine alkaline. He believes that the application of blisters resulting in abstracting the acid material from the blood; and the measure of its quantity is discovered in the plus or minus alkalinity of the urine.

Dr. Davies does not deny that a mild alkaline treatment would be a useful *adjunct* to the blisters, but does not consider it absolutely essential.

Dr. Davies remarks that good acetum lyttæ—*when it can be fully depended upon*—well painted in zones round the joints, and close to the inflamed parts, produces much less pain than the usual mode of blistering by strips of the *emplastrum lyttæ*, and the vesication takes

place with much less inconvenience to the patient. The skin should be first well sponged, and three applications of the acetum lyttæ should be made at intervals just sufficiently long to allow of the fluid being fully absorbed into the surface.

Dr. Davies' success in the treatment of acute rheumatism by blistering the skin must inspire confidence in its efficacy, and induce others to make more frequent resort to this method of treatment. Those who have had occasion to apply blisters over the region of the heart, when that organ had been affected with endo- or peri- carditis, must be sensible of their extreme value; and it is only natural to expect that their good effects would be similarly manifested in less vital and important situations, like the neighbourhood of the joints, when those parts are suffering from the pain and inflammation consequent upon an attack of acute rheumatism.

It admits of a question, however, whether in a disease like acute rheumatism we should not avail ourselves of *all* the aids that experience has taught us are useful; for by so doing we should add to the celerity of the cure. This course would appear, from Dr. Davies' statement, to be even more imperative in the less severe form of rheumatism, such as the sub-acute, which he acknowledges to be less amenable to the blister treatment than the more decidedly acute variety.

An attack of acute rheumatism is sometimes developed with apparently singular rapidity; but there is much reason to believe that some of the causes that produce a sudden outbreak have been latent in the system for a longer or shorter time before the culmination took place; and in proportion to the amount of *materies morbi* present in the blood, so will the disease assume the acute or sub-acute variety, terminating in the chronic form, unless subdued.

In corroboration of this, we may often observe that exposure to certain unfavourable conditions, such as cold or damp, may at one time be succeeded by an attack of rheumatic fever, while, on another occasion, the same person may be subject to similar exposure

without sustaining injury. The reason must be, that the human body is endowed, when in health, with extraordinary powers of resistance; but, when the system is defective or deranged, it becomes an easy prey to malign influences.*

Those medical men who have not had the advantage of seeing cases treated after Dr. Davies' method will experience some difficulty in comprehending the *modus operandi* of blisters in correcting and removing the more prominent evidences of derangement that are usually present in acute rheumatism, and would be anxious to learn whether the foul tongue—so strikingly indicative of hepatic derangement, the constipated bowels, and foetid breath, and all the other morbid symptoms, are capable of being corrected and removed by the application. I make this observation with no desire to disparage Dr. Davies' treatment, or to dispute his facts, but desire simply to record the thoughts that arise whilst reading his very interesting and suggestive report. His experience goes far to prove, what has been disputed by Dr. Copland and others, that rheumatism is the result of an excess of lactic or other combined acid in the blood, which constitutes what has been designated the *materies morbi*; and that upon its removal the disease is cured.

It would be a very important point to determine what effect the blister treatment would produce if employed for the cure of gout. As it has appeared

*It may not be out of place to mention here the undoubted power we possess in the case of the lower animals, to preserve them from epizootic disease (such, for instance, as the cattle plague), by keeping them up to the standard of health by the aid of medicine that acts specially on the blood and tissues, and thus enables them to withstand the influence of contagion. I have had considerable opportunities for testing the correctness of this assertion, having devoted much attention to the prevention of the cattle plague when it last prevailed; and I am able to say that in every instance—and they were very numerous—when the owners of stock adopted the precautionary measure of giving medicines to their cattle for the purpose of *keeping them* in perfect health, I never heard of one instance of an owner losing any of his animals.

to answer so satisfactorily in the cure of acute rheumatism under Dr. Davies' hands, why should it not be equally efficacious in the former disease? Both are most undoubtedly occasioned by the existence of a specific poison—gout, by excess of uric acid, eventuating in the production of urate of soda; rheumatism, possibly by lactic acid, combined perhaps with acetic. Experiments to determine this point would be of great interest, and of no small benefit to mankind if they should be successful; for we must consider any form of treatment a gain that would save the patient from the impairment of his constitution which the present frequent resort to specifics unquestionably produces.

The neutral substance salicin, which is obtained from the bark of the *Salix Alba*—willow, and its preparations, salicylic acid and salicylate of soda, have recently been found very efficacious in the treatment of acute rheumatism. The doses in which these agents have been given vary from five to thirty grains every hour until an impression has been made on the disease, as evidenced by the alleviation of the pain and swelling of the joints, and by diminution of the temperature and fever.

The majority of the cases of rheumatic fever which have been thus treated are said to have been conducted to a favourable issue; but there have been exceptions to the statement, exceptions which have perhaps arisen from too entire reliance having been placed on the drug, so that the necessary concomitant treatment has been overlooked.

Salicin like quinine is a decided anti-pyretic, or febrifuge, and is considered to be less liable than quinine to irritate the stomach. Quinine, however, has not been employed as it might, and as it deserves to be, in the treatment of acute rheumatism, for if given with proper precautions, it is a most valuable remedy in this as well as in other diseases of febrile type, in which increase of temperature is one of the prevailing symptoms.

To render quinine a safe and certain remedy, it is requisite to pay strict attention to the daily alvine evacuation; more especially when the tongue is foul. If this precaution is observed, this medicine will be

found most efficacious in the treatment of acute rheumatism, as well as in scarlet-fever and small-pox. The dose need not exceed two grains every six hours, combined with ten minims of dilute aromatic sulphuric acid, with a dram of tincture of orange-peel, and fifteen minims of chloric æther in three table-spoonsful of water. If this medicine is given during the entire progress of scarlet-fever and small-pox, it will as a general rule, be found to prevent many of the most severe of their ordinary sequæ. Such as dropsy and disease of the kidneys in scarlet-fever, deafness, glandular swellings and affections of the eyes, as well as the occurrence of the secondary fever, in small-pox. It is, however, requisite to mention, that in small-pox, owing to the great amount of constitutional irritation produced by the pustular eruption, it is necessary to give a dose of opium in some form at night, which will be found to be a most useful adjunct in the treatment of this disease.

It may prove interesting to some readers to learn what old Gerrard, the father of English Botany, has to say concerning the virtues of willow bark.

“The barke hath vertues: Dioscorides writeth, that this being burnt to ashes, and steeped in vineger, takes away cornes and other like risings in the feet and toes; divers, saith Galen, doe slit the brake whillst the Withyis is flouring, and gather a certain juyce (salacin) with which they vse to take away things that *hinder the sight*, and this is when they are constrained to vse a clensing medicine of thin and subtile parts.” Gerard’s Herbal, p. 1392.

The cases in which the dura mater becomes involved do not admit of any other treatment than that which is applied to the acute form of the disease generally, in activity proportionate to the severity of the attack. But when pericarditis has been attended by copious effusion, and death is threatened by the mechanical impediment to the action of the heart, endeavours have more than once been made to evacuate the fluid by some kind of paracentesis. The “pneumatic aspirator” invented by Dr. Dieulafoy, of Paris, would probably

furnish a safe and easy means of accomplishing this object; and its use would certainly be justifiable whenever a fatal result seemed likely to be produced by pericardial effusion.

As a rule, however, acute rheumatism is not immediately dangerous to life; and the risks which attend it are chiefly connected with the ultimate consequences of cardiac complication. But there are some cases in which the tendency to death is manifest from an early period, and in these it is usually uncontrollable. Such cases are always marked by great elevation of temperature. An instance has lately been recorded in which the thermometer registered 110° shortly before death; but a temperature exceeding 104° should be regarded with grave anxiety. In any such case it would certainly be proper to add Dr. Davies' method to any plan of treatment that was previously being pursued.

Sub-acute rheumatism, or semi-acute rheumatism, may be merely a sequence of the acute, or it may occur primarily. In either case, it is a state of disease intermediate, as respects both severity and duration, between the acute and chronic forms; the term sub-acute being used conventionally to mark the grades that separate the more extreme forms of the complaint. In sub-acute rheumatism all the symptoms are of diminished intensity; and the attack is seldom ushered in by rigors or chills, although at the commencement there may be one or more of these of a mild character; the fever is less marked, unless at night, and then generally passes off in the morning with perspiration; and during this febrile period, the pains are most severe. The pains are felt either in the extremities, the trunk, or the head,—most commonly first in one limb and then in another, or in two or more joints of the same limb; as the knee and ankle, or the elbow and wrist; more rarely in both knees, or both ankles and elbows. In some instances the pain flies from one joint to another, affecting different articulations or aponeurotic expansions in quick succession, as at an early stage of acute rheumatism; or it may remain stationary for some time, either in the joint, or the limb, or the part of the trunk in which it is either at first or soon afterwards seated.

The patient is always most susceptible to impressions of cold, even when in bed, and any portion of his body that may be exposed will suffer from an increase of pain and stiffness. The biliary secretion is always more or less deranged; and may occasion either constipation or diarrhœa, but more frequently the former. The appetite is impaired, the digestion slow and imperfect. The nights are often sleepless; and although the patient may to some extent be able to attend to his avocations during the day, these are always performed with great fatigue and languor, and many weeks frequently elapse before perfect recovery takes place. This must not be expected so long as there is any evidence of derangement of the secretions, which may be considered as an index of the presence of the *materies morbi* in the system.

Dr. James Copland remarks that the sub-acute form of rheumatism is that which most frequently affects the dark races, whether in the western or eastern hemispheres, the disease in them rarely assuming the truly acute character. It is one of the most prevalent diseases among the natives of the East, and is frequent among the native troops in India. The symptoms and progress of the complaint are the same in these as in more temperate climates; and Dr. Copland refers to the observations of Mr. Malcolmson, who states, "That the pains are worse in bed; but whatever may be the case in Europe, it is not the heat of the bed-clothes that causes this, as they come on frequently when the sun gets low, and continue for the early part of the night."

The treatment required for this form of the disease is depurative and restorative. The indications for the first are to be fulfilled by employing remedies that will restore the healthful functions of the liver and bowels, making the latter the channel through which the system is to be relieved of the impurities existing in it. During this process it is requisite to maintain the strength of the patient by the judicious use of alcoholic stimulants and tonics; the most valuable and efficient medicines, being quinine and iron, in combination with the aromatic sulphuric acid, and chloric or compound sulphuric ether.

The diet should consist of strong beef-tea and jelly,—avoiding farinaceous nutriment, excepting arrowroot, a cup of which may be administered, with a tablespoonful of brandy, at night, when the patient requires to take pills to act on his liver and bowels. This will sheath and protect the alimentary canal from the irritation that pills often occasion when taken on an empty stomach.

The local applications to the swelled joints should be of a stimulating nature, all alkaline and sedative remedies tending to the production of greater relaxation.

Chronic rheumatism may follow either the acute or sub-acute form, or may occur as a primary disease, from causes similar to those which produce the other varieties of the malady. When chronic rheumatism succeeds to the acute or sub-acute, the febrile symptoms attending these forms have subsided, and with them the severity of the pain. The secretions and excretions, especially the alvine, have, however, not returned to a natural or healthy state; and the tongue and mouth are generally dry and clammy in the morning; the former being also more or less loaded.

The pains in the limbs or joints assume more of an aching, gnawing, or boring character; and sometimes instead of being aggravated at night, as is most frequently the case, they are relieved by the warmth of bed. They are commonly now more fixed and continued, but much less severe; and are most frequently experienced in the shoulder, elbow, knee, and ankle; in the occipital or cervical region, in the lumbar or dorsal region, and in the ischiogluteal region; in the wrists, or various other parts, according as these may have been most affected previously, or are most exposed to external causes.

The continuance of pain, stiffness, and weakness in these parts will be found to exist so long as the biliary and intestinal secretions remain scanty and disordered.

When chronic rheumatism is a primary disease, and even after acute and sub-acute attacks, when no redness, swelling, nor increased heat remains in the affected parts, there is sometimes greater coldness than usual. The pain is dull, aching, or gnawing, often but slight,

generally increased on motion, and attended by a feeling of weakness. Frequently it is described as gnawing, boring, or merely a soreness, seated deeply, and affecting the bones. When energetic attempts are made to increase the circulation, and create perspiration by exercise, the pain is frequently relieved, or altogether removed for a time.

A form of chronic rheumatism that becomes localized in certain joints, is frequently remarkable for its obstinacy. After exposure to cold and humidity, a person who is predisposed to the disease may have one or other of the large joints, as the knee, the ankle, the hip, elbow, or shoulder, attacked by a sensation of gnawing, aching, soreness, fulness, and stiffness, and an incapacity to move without acute pain. This complaint may continue for weeks or months if it is neglected in its early stage, and may give rise to disease of the cartilages of the joint, and its usual consequences,

Dr. Craigie remarks, that although this form of the disease commences in the aponeurotic expansions, it is disposed to pass from these to the periosteum, and to produce chronic morbid action, both in it and in the interior of the articulations. This action occasions the removal of the synovial membrane and cartilages, and deposits in their place a porcelain-like substance, polished, but devoid of the elasticity of cartilage and of secreting power. Mr. Adams has denominated this affection "chronic rheumatic arthritis," and has given a minute description of it. Dr. Garrod has designated it as "rheumatoid arthritis."

Dr. Collis, Mr. Wilmot, Mr. Cusack, Mr. R. Smith, and M. Cruveilhier, have also devoted much attention to this very important form of chronic rheumatism.

Dr. Todd remarks that this affection of the joints, even when most severe, rarely causes immediate destruction of the articular textures; ulceration and suppuration seldom occur, and when they do, they are the results of a venous inflammation supervening in the course of the malady. The joints, however, do not always escape serious injury; for not only may the disease run on, uninfluenced by any mode of treatment, but exertion of

the limb, or the painful use of the affected joints, may induce inflammation in its ordinary form, and all the consequences which may follow it.

The immediate effects of the rheumatic malady are commonly confined to the ligaments of the joint, to the periosteum of the articular ends of the bones, and to the tendons of the muscles inserted into them: but these effects sometimes extend to the fibrous fasciæ, and Dr. Todd very correctly observes that these textures become thickened, and lose more or less of their natural flexibility. Such changes are seldom the result of a single paroxysm, but generally ensue from frequent attacks, or from a long continuance of the rheumatic diathesis.

In these respects, he considers the analogy with gout is obvious. The disease does not spare any of the joints, and has been met with in the hands and feet, in the temporo-maxillary joints, and in some of the vertebral articulations. It may show itself in early life, as well as at more advanced periods; but it is most common after thirty years of age, and amongst the labouring classes who are most exposed to the vicissitudes of season and weather. As the affection of the temporo-maxillary articulation is perhaps one of the least common forms of the disease, the history of a case in which it occurred seems worthy of being placed on record.

A gentleman was out fishing with a friend on a cold day, with the wind in the north-east. He had his fishing creel over his shoulder, and on crossing a narrow plank, his friend made an observation to him which caused him to turn suddenly, and in doing so the creel, which was heavy, swerved round, overbalanced him, and he fell into the water. On getting out, he had to walk a mile in his wet clothes to the keeper's house where he changed, and afterwards drove four miles home to dinner. Just as he sat down, he was seized with a rigor, but paid no attention to it, and ate his dinner as usual. In the morning, when he woke, his jaw was fixed, and he could only open his mouth sufficiently wide to show the point of his tongue, which had within the lapse of so few hours, become like a piece of macerated veal, almost totally devoid of colour. It was six weeks before

he was able to obtain the perfect use of his jaw, and open his mouth to its full extent. He was fed upon meat finely minced, poached eggs, and port wine; and took regularly, every six hours, a draught, containing two grains of sulphate of iron, two of quinine, ten drops of dilute sulphuric acid, and one drachm of tincture of cardamon, in infusion of gentian.

The error this gentleman committed was, in not taking some alcoholic stimulants immediatly after his immersion, or, at any rate, as soon as he experienced the rigor.

The sequel to his case will show the value of such a proceeding. Four years after the event related, he had been partridge shooting on a hot September day. On returning home, he dressed himself for dinner, took a book, and seated himself on his lawn under some trees, and shortly fell asleep. When dinner was announced, the sun had gone down; and when he awoke, he felt cramped all over his body, and it was only by the greatest exertion he was able to walk into the house. Directly he entered it, he was seized with a shiver, as he had been on the former occasion; but remembering the inattention he had paid to this warning, and the advice that had then been given him, he took at once a glass of hot brandy and water, which had the immediate effect of removing all danger. This gentleman never drank spirits; if he had been in the habit of doing so, it is probable that he would have required more than one glass to have averted the threatened danger of another attack of rheumatic arthritis.

I may here describe a case of muscular affection produced by cold and damp, which, although not purely rheumatic in its character, was certainly not without a strongly marked rheumatic element.

A coachman who was in service two hundred miles from London was ordered to take his master's horses in heavy rain, a distance of sixteen miles to a railway station, and thence by train to London. On reaching the station he had no time to change his soaked clothes, but, after seeing his horses safely lodged in their boxes, he took his seat in the railway carriage, and travelled

up to town as he was. During his journey the clothes dried on his back. On his arrival in London he felt rather stiff, but was able to attend to his horses. He ate his supper and went to bed. He slept through the night. In the morning when he woke he was utterly powerless to move a muscle of the body, excepting those of his face and tongue. He seemed completely paralysed. He did not complain of pain, and excepting the feeling of discomfort arising from the stiffness of his body, there was no serious symptom. His breathing was unaffected, and his circulation undisturbed. When things were placed to his lips he was able to swallow them. His tongue was covered with brown fur, and he was thirsty.

I ordered him to take a pill every six hours, composed of one grain and a half of calomel, and the same quantity of James' powder and extract of hyoscyamus, and an hour after each pill a dose of saline diaphoretic medicine. On alternate mornings he had a warm aperient draught. He was fed upon beef-tea, and an occasional tablespoonful of brandy with water. He persevered with this treatment uninterruptedly for ten days, at the end of which time he had regained the entire use of his muscles, and beyond a feeling of slight languor, he made no complaint.

Throughout the whole of this man's illness there was no evidence to be obtained of any great amount of abnormality of the secretions from his kidneys or liver, nor was there any of the peculiar acid perspiration from the skin which is so common in ordinary cases of rheumatic fever.

I have more than once asked myself when I have thought of this man's case—If his tongue had been clean instead of covered with a brown fur, what other method of treatment would have been attended with the same rapid result? I confess I should have been at a loss to have prescribed any other really efficient medicine so suitable (as the result proved) as the calomel and James' powder, to relieve him from the danger of ultimate contraction of one or more of the joints of his body.

The tongue, together with the general state of muscular paresis, served as the only indications of the existence of hepatic derangement; and it was satisfactory to observe as the tongue gradually became cleaner, so did the power of the muscles return: commencing first in the fingers and toes, and ultimately extending to the larger muscles.

If this man had possessed a strumous habit of body, he could not have tolerated mercury in the manner he did, nor would it have been justifiable so to have administered it, as the danger of salivation is always in proportion to the relaxed condition of the muscular tissues of the system, which relaxation is the prevailing characteristic of all those who possess this description of constitution. His tongue, though foul, was firm in texture, and afforded the best evidence of the safety attendant on the employment of the mineral.

The changes that take place in the articular cartilages are by a process of absorption, which is of slow progress. During the commencement, the tissue appears to divide into a number of fibres, vertical to the surface of the bone. This change resembles that produced by long maceration of articular cartilage; and depressions or grooves may be seen, which gradually enlarge, unite, and leave portions of the bone uncovered. As the articular surfaces of the bones are thus deprived of their cartilaginous coverings, the pressure and friction they sustain confer upon them a smooth and polished surface resembling that of very dense polished ivory. The bones become enlarged, chiefly by an exuberant ossific deposit around and near to the articular extremity, causing both deformity and a mechanical obstacle to the movement of the joints. These osseous deposits are seen irregularly about the joint, and vary in shape and size.

The alterations in the synovial membrane are also remarkable. This membrane is thickened and prolonged at various points into fringes or villous processes, which are soft, and of a red colour, and dip into and completely occupy depressions around the neck of the bone.

Small cartilaginous bodies, of an irregular shape and size, are sometimes found in rheumatic joints. They are either loose in the cavity of the joint, or attached by pedicles, formed by the synovial membrane, to the inner surface of the ligaments, or to the articular cartilages.

Dr. Todd observes that, when the hip-joint is the seat of the disease, "Both surfaces are deprived of cartilage; the fatty body, which in health occupies the non-articular portion of the acetabulum, and the ligamentum teres disappear; and the eburnation is apparent to a greater or less extent over both articular surfaces. There is more or less of the exuberant osseous growths around both the acetabulum, and the head of the femur; but the most remarkable feature is, that the neck of the femur is shortened, so that the position of its head with respect to its shaft it sometimes considerably altered. So remarkable is the change in the general shape of the upper extremity of the femur, that a bone thus altered has been not unfrequently mistaken for an example of united fracture of the neck of the femur."

In this disease of the hip-joint, the affected limb is much shorter than the other, and the patient is lame. Sometimes he merely rests his toes on the ground. The foot is wasted, as in fracture of the neck of the femur. The muscles of the limb, including those of the gluteal region, become more or less wasted and flattened.

Mr. Adams states that this disease, when fully established, rarely or never extends to the other articulations, and he doubts its rheumatic origin. Dr. Todd remarks that in some of the cases traces of rheumatism have not been apparent in the previous history; but that he has not himself met with a case in which complaint has not been made of pains of a rheumatic character in some of the other joints, although farther signs of disease of the articular textures were wanting. This form of rheumatism of the hip-joint attacks the male much more frequently than the female sex, although the latter are not exempt; whilst chronic rheumatism of the hands most frequently affects females.

Chronic rheumatism of the hands usually occurs in females about the period of change of life, and even before this period in those in whom the catamenial secretion is scanty or interrupted. All the joints are more or less deformed, but the fingers most so.

Dr. Haygarth remarks, "That besides the wearing away of the cartilages, the ossific growths, and the ivory-like surfaces, the joints become dislocated, and the fingers are drawn more or less out of their natural position; they are generally drawn forcibly over towards the ulnar side of the hand, overlapping each other, the innermost fingers being in a state of flexion." Both hands are generally affected, and sometimes other joints, more especially the knees. Dr. Haygarth states that the disease is almost peculiar to women. Out of thirty-three women in whom he observed it, only three had it during the period of regular menstruation. It first appeared in most of the cases between the ages of fifty-one and sixty; he observed it in the male sex only in a single instance.

Rheumatism of the periosteum is ordinarily met with in its chronic form, but sometimes in the sub-acute. It usually occurs in persons of an impaired constitution, in whom the circulation is languid, and the blood impoverished. It affects those parts of the periosteum which are most exposed to the vicissitudes of temperature and weather, as those covering the tibia and ulna, the sternum and cranium, and the bridge of the nose. The pain is dull, constant, deep-seated, and referred to the bone. It is usually unattended by redness or swelling, excepting when it occurs on the shin bone; but sometimes a slight thickening or fulness may be perceived, and the pain is increased by firm pressure. It is sometimes difficult to distinguish rheumatism affecting the periosteum from pains occasioned by syphilis and the abuse of mercury; but the antecedents of the patient will usually furnish a clue to correct diagnosis. It is not usual for nodes to form in periosteal rheumatism, although they are common in the syphilitic variety; as the greater deterioration that takes place in the constitution in the latter disease conduces to the formation of exostosis.

The treatment of chronic rheumatism is a matter that will always tax to the utmost the powers and resources of the practitioner, and will require him to have recourse, in combination or succession, to a variety of internal remedies, and topical applications. Among the latter, sulphur holds a deservedly high place, although it is not always successful in removing the pain and stiffness. I have rarely found it fail when applied to the knees, but have been disappointed in some instances in which it has been applied to the shoulders and elbows. Why this should be I cannot say, unless the field for its operation is more limited in the latter situations, there being less of periosteum and of tendinous and ligamentous structure in those joints than in the knee. It is also less easy of application to the shoulder than to the knee, which may, perhaps, be another cause of its comparative failure, as close contiguity to the joint appears to be a necessary condition for the production of its beneficial effects. Its absorption into the system (which is at once shown by the discolouration of any gold and silver that is carried about the person,) seems to be required before it affords ease or proves beneficial to the part upon which it is placed. I have known its application to the soles of the feet in a chamois leather sock prove serviceable to those who have been sufferers from diffused rheumatic muscular pains.

The internal use of *lac sulphuris* has long been a popular remedy for chronic rheumatism, and in some cases it answers very satisfactorily. It may be given in half-drachm doses twice a day, in compound infusion of gentian, with tincture of orange-peel and syrup. It may also be given in an electuary, combined with the compound confection of senna and guaiacum. Or in the form that is known as the "Chelsea Pensioner," the prescription for which is as follows:—Take Flowers of sulphur ʒii. Cream of tartar, ʒi. , Powdered rhubarb ʒii. , Guaiacum ʒi. , Clarified honey lb. i. , one nutmeg finely powdered. Mix the ingredients. ʒii. night and morning, to be persevered with until the whole is consumed.

This recipe is taken from Dr. Fuller's Treatise on Rheumatism.

Guaiacum is another remedy that is often of service in chronic rheumatism. It may be given in the form of the ammoniated tincture, combined with liquor potassæ, iodide of potassium, and some bitter infusion; or when the stimulating effect of ammonia is not required, the mist. guaiaci of the British Pharmacopœia may be prescribed, in combination with the other remedies that are demanded to correct vitiated secretions; due attention being paid to the discharge of the hepatic function, upon the integrity of which the success of most of the numerous remedies for this frequently obstinate disease will usually be found to depend. Efficient doses of liquor potassæ with eau de luce and iodide of potassium, combined with some bitter infusion or tincture, will often prove serviceable when we are satisfied that an excess of acidity pervades the tissues. All remedies of this class may be considered chiefly as palliatives, since their effects are often only transient; a recurrence of the rheumatic pains takes place when they are laid aside. It then becomes requisite to pay closer attention to the removal of the causes that induce the rheumatic condition of blood: and these will be found to consist in defects in the digestive and assimilating functions. It is necessary, therefore, to correct the imperfect digestion by the administration of medicines that exert an influence upon the stomach by giving tone to its nerves, and thereby increasing its digestive powers. In proportion as we are able to effect this, so will the condition of the patient's blood be improved, and we shall thereby strike at the root of this malady. The medicines that are most efficacious for this purpose are the mineral acids, or quinine and iron; and whenever the circulation is languid, one or more of these recuperative agents may be had recourse to.

In the pains of chronic rheumatism, I have lately seen much benefit derived from the use of the common horse-radish (*Cochlearia Armoracia*). This medicine is well known to be a powerful stimulant, and was formerly much given in scorbutic maladies; although of late years it has fallen into disuse. My attention was first called to its efficacy in the treatment of rheumatism by

a friend at Brighton, who was so impressed with the advantages he had seen derived from its employment that he wrote an account of it to me. His letter to me is as follows:—

“An under porter who had been employed for many years at the College at Brighton, became the subject of rheumatism, which gradually got worse and worse, till at last he was obliged to give up his appointment. His lower limbs were so contracted that he could not straighten them, and they were drawn up so badly that he was compelled to use crutches. He was in the Hospital for a long time, and was ultimately turned out as “incurable.” A lady who had had much experience in the value of horse-radish as a remedy for rheumatism heard of this man’s case, and told him how to use it. Her directions were, to get a large stick of the root, and scrape it as if for table, and put it into a quart jug and pour a pint of old ale upon it. After this had been allowed to stand for 24 hours, he was to take a wine-glassful of the infusion night and morning for a month. At the end of three weeks he was so much improved that he was able to walk without crutches, and when I saw him the other day he was capable of walking as well as ever he did. During the time he was taking this medicine he took no other stimulant.” My friend then gives an account of another case which came within his knowledge, of a lady the wife of an artist living near Arundel who had been a martyr to rheumatism, and who was entirely cured by using the horse-radish, but, he says, “she put the horse-radish into a pint of gin instead of ale,” and took the same for a dose as if it had been in ale.

On hearing of these cases I wrote an account of them to a highly intelligent friend of mine, a clergyman living in Shropshire, whose father was formerly an eminent physician, and who takes a great interest in everything connected with medicine, and has constant occasion to render valuable services to his poor parishioners. Being aware of this fact, and knowing that his was an agricultural district and that rheumatism was the common malady amongst its inhabitants I thought

it would be a favourable opportunity for him to try the efficacy of the remedy upon some of them. This he has done, and with considerable success.

One of the cases in which he prescribed it was that of a labourer between 70 and 80 years of age, who was obliged to relinquish work from incapacity to move about, took the medicine for six weeks—and quite lost his rheumatism. My friend in reference to this case wrote me word, “My patient is now quite free from *all* his rheumatic pains, and the remedy evidently operated in the way you describe, for one of his first observations was, “I feel quite hearty, and my appetite is better than it has been for many years.” I said, “Well, you are now looking like a winter apple—rosy and likely to keep—before you had your physic you looked very *mozy*.”*

My friend from witnessing the benefits conferred on others was induced to try it on himself. The following is the account he gives of his experiment:—

“I have experienced the value of your horse-radish remedy in my *own* case. The week before last I had a *threat* of sciatica. Blue-pill and colocynth stopped it for a time. Again it came, and the next stoppage was not so satisfactory. Then, I thought, possibly, what removes *old* rheumatism, may stop new rheumatism, and three doses did so. I have taken one or two since as a *prophylactic*, by pouring a little of the infusion into the porter I had at dinner.”

My friend informed me that he had added some mustard seed to the infusion, which I doubt not increased its efficacy.

Another remedy of recent introduction is the “*gelseminum sempervirens*” which has proved very useful in facial neuralgia, and also in some cases of rheumatism. Dr. Jurasz, of Heidelberg, has found it occasionally beneficial in the treatment of sciatica. It is a safe remedy to employ in small doses when a doubt exists when pain is complained of, whether it is of the neuralgic order or merging into rheumatism.

* “*Mozy*” a Shropshire term for a rotting apple.

As rheumatism is essentially a blood disease, the integrity and vitality of this fluid being impaired by the presence of an excess of one or more noxious elements, the good effects of tonic remedies will be found to depend very much upon the relative quantity of these disturbing agents. If this is but limited, which may be ascertained with some degree of certainty by the character of the pulse, as to its volume and lightness, there is good reason to infer that medicines of the kind under consideration will prove beneficial in assisting the *vis medicatrix naturæ* to expel the immediate causes of the disease. But to render their operation certain, strict attention must be paid to the action of the bowels and kidneys, so as to constitute these organs the outlets through which the poison may be removed.

It cannot be maintained that we possess any specific remedy for the treatment of chronic rheumatism; and it is frequently noticed that a medicine which is beneficial at one time is either inoperative or prejudicial at another. Thus the selection of the most suitable medicine, and the general direction of the treatment, must be entirely dependent upon the actual state of the patient at the time. Valuable information may be obtained from the inspection and analysis of the urine, from the condition and colour of the alvine evacuations, the appearance of the skin and tongue as to texture and colour, and also from the state of the heart's action. The knowledge derived from these sources will generally enable us to decide upon the especial remedies which are most likely to prove serviceable in the particular case; and, if we do not take them into consideration, our treatment must of necessity be more or less haphazard.

As a general principle, however, it may be said that, in the cases of chronic rheumatism in which the patient still retains a certain degree of strength and vigour of circulation, we may safely commence our treatment by a course of alkaline remedies, or alkalies saturated with lemon-juice, until there is reason to believe that the system has been relieved of the peculiar acid element

which is the probable cause of the disease. When this has been accomplished we may resort to the employment of the mineral acids, or other suitable tonics, such as iron and quinine, in order to repair the injuries inflicted on the system, and to prevent a recurrence of the malady. In cases of chronic atonic, or asthenic, rheumatism, in which the pulse is languid, the skin pale and sallow, and the texture of the tongue flabby, we may at once resort to the use of iron and quinine with decided advantage, alkaline remedies being usually prejudicial in instances of this description.

The beneficial effects of either plan of treatment in these separate forms of chronic rheumatism is greatly assisted by perseverance in the use of a mild alterative of from one to two grains of grey-powder with three or four of Dover's powder and compound rhubarb pill, taken on going to bed. The gentle stimulus thus communicated to the various secreting organs appears to add to the efficacy of the other medicines employed.

When we have reason to believe that the heart of the patient is not otherwise than healthy, relief will often be obtained from the judicious and careful employment of the Turkish bath, or of vapour and sulphur baths; and the douche bath will often prove highly serviceable when the disease is localised in some single spot.

We occasionally meet with cases of chronic gout and rheumatism which defy all medical and hygienic treatment, and it would be a grievous thing for humanity if we were devoid of the means of curing and alleviating the sufferings of such patients. The waters of Bath and Buxton in our country stand unrivalled in their effects in neutralising and depurating the blood of those noxious elements which occasion these diseases. The spring and autumn are the best seasons for taking the baths and waters of the former of these places, though they may be advantageously employed in the winter. The season for the Buxton waters is from June to October, the winds being sharp and cold late in the autumn, during winter and early in the spring. Buxton, however, is not to be selected where there is a tendency

to internal hæmorrhage. The best time for the bath is two or three hours after breakfast; and the time for remaining in it should not exceed twenty minutes. When the invalid has become somewhat acclimatized, the douche may be used if desirable.

The Cheltenham waters are also valuable in gouty and rheumatic disorders, in the lithic acid diathesis, in plethoric and irritable systems, or skin diseases, or dyspepsia with torpidity of bowels.

The Harrogate waters likewise are beneficial in the chronic forms of gout and rheumatism, and the various symptoms connected with these maladies. It is best to begin with the mild sulphur water, and then to employ the strong. Very frequently great advantage is derived from the external use of the strong sulphur waters, combined with the internal administration of the chalybeate.

Chaudefontaine, in the valley of the Vesdre in Belgium has a thermal spring which is much used by sufferers from chronic rheumatism, neuralgia, and irritability of the nervous system. The temperature of the water is 92° Fahr.

The sulphurous waters of Barèges in the Pyrenees are useful in chronic rheumatism, sciatica, lumbago, and stiffness of the muscles and tendons. These waters are taken internally as well as employed in the form of baths, douches, lotions and injections. They are contra-indicated when there is any tendency to inflammatory disease, or in heart disease.

The waters of Neuenahr, in Rhenish Prussia, are tonic and anti-rheumatic; they are useful in affections of the mucous membranes and glandular system, in simple dyspepsia, diminished secretion of bile, irritability of bladder with excess of uric acid in the urine, and in chronic gout and rheumatism. The waters are taken internally and applied externally. The dose is from two to five tumblerfuls early in the morning; with half the quantity in the evening. The temperature of the water is between 78° and 80° Fahr.

In the sub-acute attacks of periosteal rheumatism, saturnine and sedative lotions, belladonna, etc., are the best local remedies, with the internal administration of quinine, with dilute sulphuric acid, with or without steel.

In mercurial and syphilitic periostitis, the iodide of potassium with cinchona or sarsaparilla are suitable medicines; but they may often be changed with advantage for those that are less of an alterative and more decidedly of a tonic character. In the chronic form of periosteal rheumatism much the same treatment is required as in the sub-acute.

Another important variety of rheumatism is that which attacks the nerves or their fibrous sheaths, and is apt to be confounded with neuralgic pains arising from many other causes. Neuralgic rheumatism is frequently seated in the face and head. When in the former, it is often mistaken for toothache, and extraction of one or more, and frequently even of many, teeth is practised as the remedy for the disease, but without any relief being afforded. Before the occurrence of such an attack, there is invariably more or less deterioration of the general health, and the pain that is experienced when the facial nerves are implicated adds to the constitutional disturbance and prolongs the disease. The appetite becomes impaired, the digestion is enfeebled, and the patient is frequently worn out by want of sleep.

A residence in a clay district, or in a damp locality, or proximity to a river in the winter season may frequently be exciting causes of this description of rheumatism; in fact, whatever has the effect of lowering the vitality of the blood operates prejudicially on the nervous system; and the pain that is felt may be considered as the index that points to this primary defect. When the nerves of the head and scalp are affected, there is often at the commencement extreme sensitiveness to the touch; but at a later period relief is sometimes afforded by pressure applied to the seat of pain.

The treatment applicable to this form of rheumatism consists in first correcting any derangements that may

exist in the excretions. After alteratives have been given, chalybeates in combination with quinine will be found the most efficient medicines for restoring the blood and nerves to a healthy state; but their efficacy will almost entirely depend upon the mode of their administration. A small dose of quinine administered frequently, say a single grain every hour, is much more useful for the relief of pain than any dose given at more distant intervals. Its power will be materially increased by combination with iron, and with a very small dose of some active sedative.

The most severe and frequent form of neuralgic rheumatism is that which affects the great sciatic nerve, and occasions one of the forms of the malady commonly known as sciatica. Among the Latins it was called *ischias*, from *ισχίον*, the Greek term for hip, which was afterwards corrupted into *isciatica*, or *sciatica*, which word Shakspeare used in his *Timon*,—

“The cold *sciatica*

Crippled our senators, that their limbs may halt

As lamely as their manners.”

Sciatica has sometimes been mistaken for inflammation of the psoas muscle, but in the latter there is from the first less tenderness to the touch, with much more enlargement, and the pain shoots higher into the loins. In sciatica the whole limb, instead of continuing to swell, soon wastes away, and the emaciation extends to the nates, and in many instances to the testicle, of the affected sides.

This description of rheumatism is invariably preceded by more or less of constitutional derangement; but owing to the symptoms being unattended with pain, the individual is frequently unconscious that he is otherwise than in the enjoyment of his usual health, until from exposure to damp or cold, or other noxious agencies, he is apprised of it by the occurrence of an acute lancinating pain in his hip, which renders him incapable of using the limb.

The nerve which is immediately implicated in the production of this pain, termed the great ischiatic, is formed by branches from the sacral plexus, and passes down the back of the thigh to the ham, and then, under the name of the posterior tibial, descends to supply the leg and foot.

The pain follows the track of the nerve, and is always aggravated by damp and cold, and also by pressure and movement of the limb. Sometimes, though seldom, we meet with a case in which the posterior tibial nerve displays all the symptoms incident to an attack of inflammation of the sciatic, without the latter being implicated in the seizure. The pain commences underneath the knee-joint, where it is most severe, and extends to the calf of the leg and down to one or more of the toes, the agony and pain of such an attack being only equalled by the most severe paroxysm of sciatica.

We also, but more frequently, meet with cases where the pain is confined to the heel, and the patient for weeks is unable to put his foot to the ground. Instances of this kind are as a rule dependent upon a loaded or unhealthy state of bowels; and on the administration of active aperients, and medicines that restore the tone of the nervous system, the pain vanishes. In such cases the disease is due to a distinctly mechanical cause. This is a constipated state of bowels, the cells of the colon having become impacted with hardened fæces, the intestines are distended with flatus, and the rectum is either surcharged with fæcal matter, or the hæmorrhoidal vessels are in a state of plethora. On the removal of these conditions by free action of the bowels, the pressure is removed from the sacral plexus or the great ischiatic nerve, and relief is given to the pain. If, however, this condition should be overlooked, and the disease be attributed to some other cause, the patient may continue for weeks or months to suffer from his malady.

It is not unusual to find that persons who are subject to pains of this nature are also liable to a varicose state of the veins of the thighs and legs, which depends upon a mechanical interruption to the return of the blood,

occasioned by the pressure produced by the loaded state of the bowels on the internal abdominal vessels.

The most striking instance of the effect of mechanical pressure in producing such a condition is occasionally observed in pregnant women, in whom the gravid uterus acts in a similar manner, and prevents the return of the blood from the lower limbs.

In sciatica, as in gout, and in numerous other blood diseases, we meet with two forms of the malady dependent on the peculiar constitution of the patient. These may be broadly described as the inflammatory and the non-inflammatory. It is most important to form at the outset a correct diagnosis as to which of these forms we are called upon to treat, for an error may in either case very seriously protract the proverbially long duration of the malady.

If sciatica occurs in an individual in whom we have reason to believe that his blood abounds in fibrin and red corpuscles, we may safely venture on the local abstraction of blood by cupping, or other means, from the seat of the disease; and by adopting this course we may succeed in preventing the extension of inflammation from the sheath of the nerve to its substance, and the consequent degeneration of structure which frequently ensues from neglect of this primary precautionary measure.

The sciatic nerve, in consequence of the congestion of the vessels of its fibrous sheath, and the distension of the capillaries immediately surrounding it, presents us with a condition analogous to what occurs in gout from pressure consequent on similar distension: and, until this distension and pressure are removed, no permanent relief can be afforded the patient. Owing to the blood containing an excess of fibrin, its circulation is mechanically retarded in the more minute vessels, and the more dense—or richer—the blood, the greater will be the suffering.

Unless timely and prompt relief is given to the patient by the abstraction of blood by cupping, leeches, etc., etc., the ordinary results of inflammation may ensue by the deposit of fibrinous matter, lymph, or

serous effusion, terminating in wasting and degeneration of the nerve structure, attended with a concurrent wasting of the muscles of the thigh and leg.

The most intractable form of sciatica is usually met with in persons who have been accustomed to live well, have taken but little exercise, and have neglected to pay that attention to the signs indicative of a departure from health that would have served as warnings to more careful and observant individuals; the most important of these neglected indices being a constipated or irregular state of the bowels. In such persons it requires less to light up the flame of inflammation in a large nerve like the ischiatic, than in those whose organizations are differently constituted, and whose blood is deficient in the richer elements. It will also be found that more or less hepatic derangement has existed previous to an attack of acute sciatica, and it is by no means uncommon to discover that the liver has become enlarged, and has descended below the ribs.

The results that attend upon a deranged function and an hypertrophied condition of the liver, may be regarded as the proximate causes of sciatica, in the majority of instances of the acute form of the malady; and even in the milder types the same causes are more or less in operation. Owing to an increase in the size of the liver, not only is the secretion of bile diminished in quantity, but its quality becomes impaired, and it fails to act on the intestines as the efficient stimulant nature has designed it to be. These safety-valves of the system become consequently incapacitated for removing effete materials from the body, and their retention acts as a direct cause of subsequent derangement. In the inflammatory form of sciatica, a constipated state of bowels conduces to inflammation, whilst in the non-inflammatory type, it occasions neuralgia.

In either instance, at the outset of the disease, relief is afforded by establishing a free action of the liver, and by completely emptying the bowels.

The secreting power of the kidneys is also much diminished, and the urine is scanty and of high specific gravity. On a free discharge of bile from the gall

bladder, and on obtaining an open state of bowels, the kidneys will return to their natural function, which was suspended owing to the pre-existing abdominal plethora.

The medicines that are most suitable in the inflammatory form of sciatica are those that are found to answer best in ordinary rheumatic inflammation, and we shall best serve our patient by taking a broad view of his case, and by treating his malady constitutionally, rather than by directing our attention too much to his local ailment. The ordinary treatment in acute sciatica, as in other forms of inflammatory rheumatism, is to prescribe colchicum for its cure, and this drug frequently exercises a power of assuaging pain similar to, but less than, that which it possesses in gout. According to my observation, however, its virtues are overbalanced by its vices, and, after a very close attention to its effects, I would withhold it in every form of rheumatism, excepting that affecting the eye, which from the importance and the delicate structure of the organ, justifies the use of any medicine to save it from destructive changes.

I have discussed this subject somewhat fully in an earlier portion of this volume, and need not repeat the arguments already advanced against the indiscriminate employment of colchicum. I will simply advert to one point connected with my impression of its *modus operandi* in sciatica, when the disease has assumed the chronic form. I have previously observed that when colchicum is an admissible remedy, so also is blood-letting, and this view may serve to mark the conditions under which it is safe and proper to have recourse to the medicine. It certainly is not so in the chronic form of sciatica, when we have no longer reason to assume that the blood contains an excess of those richer elements, which alone justify its employment, and on which it more especially exercises its power. The effect of colchicum in altering the consistence and diminishing the vitality of the blood renders it an unsuitable remedy for chronic diseases. The advocates for the employment of colchicum in gout sometimes contend that it alleviates pain by diminishing the strength of the

heart's action; but its depressing effect is really due to the alteration which it produces in the blood itself; and this fact is far too important to be overlooked. No single function of the body—all of which are dependent on the nature of their blood-supply—can be otherwise than affected by a continuance in the use of this energetic hermodactyl. In chronic sciatica, therefore which is a disease originating in defective digestion and assimilation, any medicine that by its depressing influence would add to these defects, cannot be considered as an eligible one, more especially when it is prescribed chiefly with the object of alleviating pain.

Dr. Fuller, although favourable to the employment of colchicum in the treatment of rheumatic affections, considers it necessary to give a caution as to the too liberal use of this as well as of other active remedies. He says, at p. 335, "Whether mercury and purgatives or colchicum be employed, care must be taken so to administer the medicines as to remedy defective secretion, eliminate the poison, and restore a healthy state of assimilation, without lowering the patient and exhausting his strength. The whole energy of his constitution may be needed to bear up against the protracted irritation arising from chronic inflammation of the joints, and even if he escape articular disorganization, nothing, in my experience, so greatly tends to endanger recovery, nothing assists so much in perpetuating the rheumatic state, as over-active and depressing treatment."

When the acute symptoms of sciatica have subsided, the medical treatment does not differ from that employed in other forms of chronic rheumatism. There are also two very valuable local remedies from which I have seen great benefit, and these are the hot douches, and daily friction by a professed rubber. The friction and manipulation of the weakened and wasted limb is often greatly conducive to the restoration of its pristine vigour.

Sciatica, both in its acute and chronic form, is often witnessed in persons who have passed the middle period of life, and have increased largely in bulk and weight,

from deposits of fat, more particularly over the region of the abdomen. This increased weight indisposes the subject of it to take that amount of exercise which claims precedence over all other remedies for the removal of his malady; and his habits consequently operate both as an exciting and sustaining cause of his disease. Attacks of this nature are not inflammatory, and are aggravated by lowering treatment. The rational cure for them consists in striking at the root of the malady by repairing the defects of assimilation which have, for a longer or shorter time, preceded the occurrence of the sciatica, and have produced an excess of the fatty globule over that of the more healthful constituents of the blood. This can only be accomplished by a judiciously regulated diet, regular exercise, either of walking or riding, and the employment of those medicinal agents which assist the digestion and maintain the power of the heart.

When sciatica occurs in an individual more or less anæmic, we may generally regard it as proceeding more from the effects of irritation than from inflammation. This irritation may arise either from a mechanical pressure of hardened fæces, or a disturbed state of bowels, acting wholly on the nerve, which, from want of tone, is incapable of resisting the pressure without pain succeeding to it.

This form of the disease demands a very different treatment to that just considered; for lowering or depressing agents, that are useful in combating inflammation, only add to the severity of a complaint which is more neuralgic than inflammatory.

It may, and most probably will be requisite at the onset of treatment to resort to medicines of a cleansing and depurating kind; but the effects of such remedies should be carefully watched, so that they do not aggravate the malady by inducing greater depression.

I have very recently witnessed the good effects of iron, in the person of a medical man who had suffered so long and severely from the wearing influence of sciatica that his life became a burden to him, and he seriously contemplated giving up his practice from sheer physical

inability to continue it. He had had the very best advice and the most careful and judicious treatment for the cure of his complaint, and almost every suitable remedy had been tried excepting iron. This was prescribed for him in combination with ten-drop doses of *tinctura lyttæ*, and in a fortnight from the time of his commencing with it, he was free from all pain, and had regained his ordinary health.

In this case there was no marked evidence of deterioration of blood to serve as an index for the administration of iron, but the action of his heart was feeble, doubtless owing to a deficiency of this mineral in his blood.

I could refer to many other cases illustrative of the beneficial effects of iron, especially in combination with quinine, but a single one must suffice. A gentleman aged seventy-five had been suffering for many months from intense pain in his left sciatic nerve, pain which never left him either by night or day. At last he became incapable of walking, and was confined to his bed. His nights were almost sleepless, and his life had become a burden. I prescribed for him a mixture containing twenty-four grains each of sulphate of iron and disulphate of quinine, three drachms of aromatic sulphuric acid, three drachms of chloric ether, an ounce and a half of compound tincture of cardamoms, and compound infusion of gentian to twelve ounces, an ounce and a half to be taken twice a day. To diminish pain, and procure sleep, he took every night two pills containing five grains of compound styrax pill, and five grains of compound extract of colocynth. He continued the treatment for three months, in the course of which time the pain gradually left him and his strength returned, so that he was able to take exercise and generally to live as he had done before the attack. Two years have since elapsed, and he has had no return of his malady.

It is worth mentioning that sciatica occurs very largely among those classes of the labouring population whose lower limbs are exposed to the united influences of cold, wet, and inaction. Miners, who crouch in damp and narrow passages, coachman and cab-drivers, who sit for hours upon damp cushions, are especially liable to

the disease. And as such persons are frequently unable to procure careful medical treatment, it follows that nostrums for sciatica are particularly rife among them. Of these, one the most frequently successful consists in the application of severe counter-irritation to the heel: a course that implies the softening and partial removal of the hard cuticle of the part by prolonged soaking in hot water, rendered alkaline by soda. Acupuncture has also been a popular remedy for sciatica in many countries; and it has certainly this basis, that in some cases the pain is maintained by pressure exercised upon the nerve by inflammatory exudation within its sheath. Sir Joseph Fayrer has placed on record a most instructive case of protracted and obstinate sciatica, in which, through the wasted glutei, he detected some fulness in the track of the nerve. He thereupon introduced a fine trocar into the swelling, and gave exit to a collection of serum, not only with immediate relief, but with the effect of producing permanent cure. In all cases of long-standing the course of the nerve should be most carefully examined, and any point of manifest fulness or tenderness should be subjected to careful scrutiny.

When the limb is wasted by long disease, no remedy is more important than Faradic electricity, applied to the individual muscles after the manner of Duchenne. By its means these structures may be retained in health and vigour, preserved alike from contraction and from fatty or other degeneration, and kept in such a state that, whenever the nerve-malady is cured, they will at once be able to resume their proper functions.

There is, however, no more rapid and certain remedy for the relief of pain in sciatica than the hypodermic injection of morphia, and a trial of it should invariably be made at the onset of the disease.

Next in the importance to sciatica may be placed lumbago, or rheumatism affecting the muscles or fibrous tissues of the loins and back. This may be either an original and independent affection, or may be connected with other forms of the complaint. In its sub-acute form it is either a congestion or inflammation of the lumbar fascia, the pain being referred to the fleshy

muscles on one or both sides of the loins, and being increased by every movement of the back, so that the individual is for the time unable to raise himself erect. When the pain in the loins is really rheumatic, and unconnected with congestion of the venous sinuses of the lumbar vertebræ, and its consequence, congestion of the kidneys, the lower limbs and joints are seldom affected; but when the pain arises from these causes, there are additional symptoms of marked disorder in the urinary excretion, symptomatic pains, numbness, cramps, prickings or lancinating pains in the limbs, and in one limb if only the kidney is affected.

In the chronic form of lumbago the pain is less acute, and is much dependent upon the state of the weather, the condition of the digestive organs, and the nature of the secretions. The pain and stiffness of the back after sitting or lying cannot be overcome without an effort being made to assume the erect posture.

The treatment for the sub-acute form of lumbago requires to be prompt; and the earlier that relief is afforded, the less risk there is of the disease lapsing into the chronic variety.

If the patient be of a robust habit of body, able easily to spare a part of his blood, cupping over the loins should be resorted to. When this operation has been performed, a decided dose of medicine should be administered, thoroughly to clear out the alimentary canal, and to act freely on the liver. Two grains of calomel, with two of James' powder, and six of colocynth, may be given at night, followed in the morning by a stimulating saline aperient draught.

When these two important points have been attended to, it will generally be found that a great mitigation of pain will be produced, and the subsequent treatment will have for its object the correction of any excess of acidity, which always more or less exists, by the use of alkaline and diuretic remedies.

When the extreme severity of the pain is subdued, sedative and stimulating liniments may be employed. The compound camphor liniment, with opium and belladonna, will generally afford great relief to the sufferings of the patient.

The rectified spirit of turpentine combined with the simple camphor liniment is also another very good rubefacient, and from its absorption by the skin it acts, frequently, energetically on the kidneys. The diet should be light and unstimulating; farinaceous food should be preferred to that of an animal nature.

The thirst and feverishness that ordinarily accompany the sub-acute form of rheumatism may be assuaged by the use of diluents that promote the action of the kidneys. Lemonade, Seltzer, Lithia, Vichy, and Soda water, act as medicinal and mechanical agents in washing out, so to speak, from the system the offending causes productive of the disease, and they are usually extremely grateful to the patient. A gentle but decided action daily should be maintained from the bowels; and alteratives, combined with aperients of sufficient strength, answer this purpose, and are superior to saline aperients, which tend both to create flatulence and also to diminish the digestive power of the stomach.

In the early stage of the sub-acute form of lumbago, after cupping has been practised, the pain that remains may be alleviated by heat applied to the loins and back, either in the form of hot salt in flannel bags, or scalded bran enveloped in similar material.

Chronic lumbago is frequently a very obstinate form of disease, and many patients become tired of resorting to internal remedies for its cure, not understanding the process by which they have become affected with the disease, or the rational means by which they are to get rid of it. They refer their attacks to a particular day or hour, without having taken any cognizance of the symptoms which preceded the accession of the pain, and which, if they had regarded them, would have enabled them to have averted their malady.

The internal remedies that are required for chronic lumbago are those that tend to repair the defects discoverable in the system, and to stimulate the digestive organs to a more efficient performance of their functions.

The stimulating gum resins are favourite and useful medicines for this purpose, and none answer better than the ammoniated tincture of guaiacum of the British Pharmacopœia. Copaiba, the oils of rosemary and juniper, spiritus ætheris nitrici, sulphur, and numerous other remedies have their advocates.

The local remedies are equally numerous. A "poor man's plaster" placed around the loins; a new black silk handkerchief, or several thicknesses of flannel, with turpentine, bound around the loins; the Turkish bath, hip and hot air baths, etc.,—all of which remedies more or less promote action of the skin and kidneys, from whence the causes of the disease are frequently carried out of the system. Change of air, and the mineral waters of Bath, Buxton, Wiesbaden, Baden-Baden, Karlsbad, etc., are often efficacious in restoring the patient to health. Practitioners who have to deal with lumbago among the labouring classes, often find that the most effectual remedy is a very large blister, measuring perhaps eighteen inches by six, applied across the loins. The practice of Dr. Davies in acute rheumatism may be held to throw some light upon its *modus operandi*. Rheumatism of the neck, cervical rheumatism, torticollis, or crick in the neck, is frequently the result of sitting in a draught of cold air. To relax the painful muscles the patient inclines his head to the affected side; and as the muscles soon become rigid, the proper position is not regained without a sharp twinge. It cannot, however, always be traced to a *coup de vent*, as when the system is surcharged with an excess of the rheumatic virus, the strong fascia at the back of the neck becomes the seat of the disease independently of any such influence.

The internal treatment of cervical rheumatism does not differ from that of the other varieties, and I have usually found that the remedy that is most speedy in restoring the muscles to their original state is quinine, to be taken after having prescribed a moderate dose of aperient medicine. A draught composed of one grain and a half to two grains of quinine, with from ten to

fifteen minims of dilute aromatic sulphuric acid, and a drachm of tincture of hops, in camphor mixture, may be taken twice or thrice a day.

Rheumatism of the female breast is a form of the disease which is sometimes exquisitely painful, and which has occasionally led to the belief that the patient was suffering from cancer. This complaint occurs most frequently in women who have borne children and suckled them. It is not by any means uncommon to discover in their breasts hardish irregular masses of glandular substance, which are movable and unattached to the walls of the chest. Such masses are wholly unimportant, and appear to result from inattention to the breasts after weaning. It is owing to the presence of these hardened structures, in *mammæ* which have become affected with rheumatic or neuralgic pains, that the suspicion of malignant disease has arisen, more especially when the pain is aggravated by moving the arm of the affected side. In cases of this kind it is most important to establish a correct diagnosis, both for the peace of mind of the patient, and also in order to arrive at the readiest means of cure.

The pain is occasionally confined to the substance of the breast, but more frequently it extends to the pectoral muscles adjoining, and it is said to ascend the throat to below the ear or to the mastoid process. Sometimes a portion of the pectoral muscle immediately below the breast is the seat of very acute pain, and the periosteum is occasionally implicated. The part is usually swelled, but without any increase of hardness of structure. Women who have suffered from large losses of blood are especially prone to an affection of this nature.

In some few cases these pains appear to be simply of a neuralgic character, and to be unconnected with the rheumatic diathesis. This, however, is unimportant so far as treatment is concerned; for the medicine, regimen, and diet, that are suitable for the one case are generally adapted to the other. The following example will show the difficulty that sometimes attends a correct diagnosis of this form of rheumatism.

A lady aged forty-five lost her only child, and for many months remained inconsolable. Her health became impaired, her appetite fell off, she lost flesh, and, being of a rheumatic constitution, she suffered pains in various parts of the body. At last the chief of her pain centred in her left breast, and prevented her from obtaining rest either night or day.

She was subjected to various kinds of treatment, but without relief; and when, after many months of acute suffering, she became anxious to learn the nature of her disease, it was hinted to her that it might be of a malignant nature. This supposition, of course, did not add to her comfort, but made her worse than ever.

On examining her breast there were found the glandular masses previously referred to, freely movable within the structure of the organ, and devoid of all pain on pressure. The nipple was not in the slightest degree retracted. An examination was made of the right breast, and it presented exactly the same characters as the left. She had never had any pain on the right side.

The treatment employed in this case was altogether irrespective of the breast, which the patient was told to leave alone, only covering it with a piece of flannel, because the pain was always aggravated by cold. She was ordered the tincture of sesquichloride of iron, quinine, and chloric ether, with ten-minim doses of tincture lyttæ. After a few weeks the pain subsided, she considered herself well, and left off her medicine. She seemed to forget all her sufferings, and on one occasion employed her arms for some time, which brought on a return of the pain, and compelled her to resort once more to her medicine until she was free from it again.

Sometimes, but fortunately only seldom, rheumatism is found to invade the membranes of the spinal cord. Dr. Copland records a case which he attended in 1820, in which acute rheumatism of the joints was complicated with pericarditis, and was followed by chorea and inflammation of the spinal cord, soon passing into effusion of lymph, and terminating in acute general

palsy. He also refers to five other cases that he had seen, two of them in children under twelve years of age, and in three of which he had opportunities of examining the spine after death. In all three, coagulated lymph was effused within the theca, and pressed upon the cord and the origins of the nerves; and the venous sinuses of the vertebræ were remarkably congested.

The same author observes, "that it ought not to be overlooked, that inflammation of the membranes of the cord, occasioning effusion of lymph and palsy, is generally attended by severe pain in the limbs, and a girding sensation around the abdomen, which may be mistaken for rheumatism, but which are owing to the irritation at the origins of the nerves supplying the pained muscles, and may be quite independent of pre-existent rheumatism, or of the rheumatic diathesis."

This rheumatic affection of the spinal cord may sometimes terminate in paraplegia.

I am acquainted with a gentleman who was much exposed to weather, and who, when on shore in the East, went in pursuit of wild ducks, and frequently laid himself on the bare ground to sleep. He was seized with a violent inflammation in his loins, which at first was considered to be an attack of acute lumbago, but which ultimately was found to involve the spinal cord and its membranes, and terminated in incurable paralysis of his lower limbs. This gentleman possessed a rheumatic diathesis.

Rachidian pains, or pains in the back, are frequently complained of by other patients than those who suffer from rheumatism; but they are more common in the latter. When pains of this nature occur with great severity, commencing from the nape of the neck and extending the length of the spinal column, it is most important to diagnose whether they are the result of inflammation set up in the cord or its membranes, or whether they arise simply from irritation of these structures. In cases of this description the benefit of any doubt should always be afforded to the patients, and no treatment will prove more conducive to revealing

the exact nature of the seizure, than the injection of morphia beneath the skin. If the pains result from irritation solely, the relief will be almost immediate. The following case may serve to illustrate this.

I was recently sent for into the country to see a lady who had just returned from abroad, and who had undergone great fatigue and excitement consequent upon the breaking out of the war. She had suffered greatly from headache for many years, and inherited strongly the gouty rheumatic diathesis, but had never had declared gout.

She was subject to frequent attacks of congestion of liver, and whenever this occurred the pain in her head became severe, and was not relieved until her gall bladder had been emptied and her bowels freely evacuated. It was then necessary to employ sedatives to subdue any remaining headache, which usually assumed a neuralgic character.

On reaching Calais to embark for Dover, she was seized with one of her distressing headaches, attended with sickness, but she resolved to cross the Channel, notwithstanding her suffering. On reaching Dover the pain had shifted from her head to the back of her neck, and extended throughout the whole course of the spinal column. The agony she suffered was unbearable, and she actually screamed from pain. Her lower limbs were icy cold, and she complained of a numbness and pricking in them. The physician who was called in to see her, attributed her symptoms to congestion of the spine, and very properly administered a sedative to relieve her pain. He ordered twenty grains of chloral. She had no sooner taken the draught, than she was seized with sickness and the most violent convulsions. Her lips turned purple, and her struggles were so great that it took four persons to hold her. There was no doubt that she had not rejected the whole of the chloral, for she shortly became more composed, and entreated to be allowed to have some morphia injected under her skin.

This request was complied with, and was attended with the most satisfactory results. The pain in the spine diminished, warmth was diffused over her lower limbs, and she slept for two hours.

At the end of six hours a recurrence of her spinal suffering occurred, which was at once assuaged by a repetition of the morphia injection. Her subsequent treatment consisted of the administration of ten-grain doses of bromide of potassium, with ammonia and bicarbonate of potash, in a state of effervescence, every four hours, together with attention to the correct performance of her hepatic functions.

The pleura becomes occasionally implicated in the course of an acute or sub-acute attack of rheumatism; the disease in such cases usually extending from the intercostal muscles, and sometimes leading to the ordinary results of pleurisy, in the effusion of fluid and lymph. The treatment required is to subdue the local inflammation by the application of repeated blisters, in addition to the administration of the medicines previously referred to.

In a few cases, the diaphragm and the peritoneum become involved. When rheumatic diaphragmitis occurs it may be diagnosed by the sharp burning pain, with tension and cord-like constriction at the lower part of the thorax, particularly beneath the sternum and hypochondria, and extending to the liver; increased and somewhat descending during inspiration, diminished and ascending during expiration; augmented by coughing, sneezing, fulness of stomach, and pressure on the abdomen; likewise by vomiting, by the expulsion of the fæces or urine, and by bending the trunk of the body in any direction. The breathing is short, frequent, anxious, small, and performed entirely by the intercostal muscles, the abdomen being nearly motionless. The hypochondria fall inwards, or are retracted, and with the precordia are sensible to pressure. We frequently observe painful and difficult deglutition, referable to the lower part of the œsophagus and cardia; great anxiety, and occasional interrupted sighs; involuntary retraction of the angles of the mouth, or *risus sardonius*; and sometimes furious delirium.

The pulse is always frequent, at first strong and hard, afterwards small, more quick, and wiry. The bowels are constipated, and the urine is voided in small quantity;

thirst is at first urgent, afterwards not felt; and restlessness, particularly as the disease advances, is extreme.

When the inferior surface of the diaphragm is inflamed, the stomach and liver seldom escape participation in the disease. In this case, the pain and sensibility of the hypochondria, are increased, and the stomach is more severely disordered. Dr. Copland expresses his opinion that inflammation of the diaphragm would be more frequently remarked in practice if the severity of the rheumatic pains, and of the remote symptoms, did not mask those more directly connected with the affected organ, and thereby mislead the practitioner.

The treatment of this complication must not only be energetic, but it must also be employed early. Full blood-letting from the arm, until a decided effect, short of syncope, is produced; cupping on the loins and back, or each side of the spine; purgatives, refrigerants, and diaphoretics; external fomentations, and cataplasms; tepid baths; purgative and, subsequently, emollient enemata, with complete stillness and silence,—should be employed according to the exigencies of the case.

Dr. Copland warns the practitioner not to be deceived by the singultus, and by the great depression of the powers of life, so frequently attendant on this disease, and thus to be led to the exhibition of anti-spasmodics and stimulants, when opposite measures are required. Nor should he be induced by the state of the stomach, and of the matter discharged from it, to exhibit emetics. When vomiting is present it should be allayed; and for this purpose, as well as to prevent the formation of coagulable lymph, and adhesion between the surface of the diaphragm and the adjoining viscera, he strongly urges the propriety of administering large doses of calomel and opium, to the extent of from ten to twenty grains of the former, and from one to three of the latter, repeated at intervals of from six to seven hours; the first dose being given immediately after blood-letting. He considers that the danger attendant on this form of disease requires prompt treatment by powerful agents, and that calomel, opium, and camphor are particularly

serviceable. It is however, very rare in the present day to meet with a case of sufficient severity to warrant or demand such heroic treatment. The valuable properties of calomel, opium, and camphor, may be obtained by infinitely smaller doses than those recommended; and we shall seldom require to step beyond the ordinary manner of administering them.

Rheumatism rarely affects the abdominal muscles: but when it does so, it may be mistaken for peritonitis, owing to the intense pain felt on pressure or motion. A careful examination of the abdomen, the state of the countenance, and the absence of retchings, and of the chief symptoms characteristic of peritonitis, will readily indicate the nature of the disease. Dr. Copland observes, "It should be kept in recollection that acute rheumatism of these muscles may be followed by peritoneal inflammation;" and states that he has met with two or three cases, although he acknowledges them to be rare. The pains and sensation of tension around the abdomen, often attending irritation and inflammatory action of the spinal cord on its membranes, can hardly be mistaken for peritonitis. Dr. Copland considers the sheaths and aponeuroses of the abdominal muscles to be the chief seat of the rheumatic affection, and that it is most apt to occur during the puerperal states. The treatment is the same in this variety as in the other forms of rheumatism; and especial relief will be given to the pain by the hypodermic injection of suitable doses of morphia.

Rheumatism, or rheumatic inflammation, may attack the ovaries or the uterus, upon the disappearance of the disease from more external parts; but these cases are rare. Dr. Copland records an instance of metastasis to the ovaries in a woman who, after sleeping in a damp bed, was seized with violent rheumatic pains in the loins and limbs. Three days after the commencement of the rheumatism she was suddenly attacked by excruciating pains in the hypogastrium, a little above each groin. Soon afterwards, a tumour could be distinctly felt in each ovarian region. They were extremely painful and tender upon pressure. The pains in the limbs were

greatly abated, but pain was still complained of in the loins. All the ordinary symptoms of rheumatic fever were present. The temper was variable and hysterical. She was bled and leeches below the groin, had repeated doses of calomel with ipecacuanha and opium combined, saline aperients being interposed, so as to keep the bowels freely open. She also had a warm hip bath. Four or five days after the attack commenced, the catamenia came on, and pain, tenderness, and swelling gradually disappeared from the hypogastrium. The testes may also be attacked by rheumatic inflammation, attended with great swelling and pain; but in such instances the disease is usually of the gonorrhœal form.

The last description of genuine rheumatism to which I shall refer is that connected with disorder of the menstrual discharge. Women who possess the rheumatic diathesis are very liable to suffer from the disease when the discharge becomes irregular and scanty, or when it ceases altogether. I have seen several instances of this form, and they have all of them exhibited marked derangement of the hepatic function, with more or less enlargement of the liver.

An interruption to, or cessation of, the depurating effect produced in the system by the regular catamenial discharge, must occasion more or less congestion in the vascular system, and plethora of the abdominal organs; and it is owing to this alteration, at the time which has been designated the critical period of life, that females are most liable to become affected with rheumatism, as well as various other diseases.

The liver, as might be imagined from the principles that have already been laid down, is the organ most prone to become congested under such circumstances; and in proportion as our efforts are directed to procure and maintain a healthful action of this gland, so shall we be able, generally, to preserve the patient from the consequences that might otherwise attend so great an alteration in the system as that which is produced by the cessation of the menstrual flow.

The treatment required will depend upon the description of rheumatism manifested, whether it be acute, sub-acute, or chronic.

The first two varieties will be most benefited by the employment of an antiphlogistic treatment and regimen, until they have lapsed, which they are prone to do, into the chronic form. For this, we must, as a rule, pursue the plan that has already been described by a judicious combination of tonics with alteratives; but, from what has been advanced as to the tendency of the liver to become congested, the latter agents are more strongly indicated in this form of the disease than they are in its uncomplicated variety.

It still remains to mention a form of disease which almost precisely resembles rheumatism, which is called by its name, and which could with great difficulty be distinguished from it by any external symptom, although it is probably very different in its essential nature. This is the so-called gonorrhœal rheumatism, an inflammatory affection of the larger joints that is apt to supervene upon gonorrhœa, especially when the patient has been exposed to changes of temperature or to hardship. In this form, as a rule, there is more swelling of the affected joints, and less tendency to acid perspiration, than in rheumatism of the ordinary kind. The pain is often very considerable, and the disease protracted and severe. It usually commences about ten days or a fortnight from the first appearance of the urethral discharge, which often either diminishes, or entirely disappears. Sometimes the two affections exhibit periods of alternate activity, and resist treatment with remarkable obstinacy.

Gonorrhœal rheumatism may be either acute, sub-acute, or chronic; the last form generally following the first and second. A severe aching pain is complained of in one or more joints, the pain soon becomes acute and burning, and effusion rapidly appears within the capsules and bursæ, which become much distended. The external surface is rarely or never reddened or inflamed. Movement aggravates the pain, which is also much increased during the night, and occasions loss of rest. In the acute form, the fever is always high, and the pulse ranges from 100 to 120. The tongue is loaded, the bowels are confined, and the urine is surcharged with lithates. The perspiration is copious, and sometimes offensive; and the disease presents many points

of resemblance to pyæmia, of which, indeed, it is by many surgeons believed to be a variety.

The course of this complaint is extremely uncertain, and its duration may extend over many months. The acute symptoms may subside, but the sub-acute and chronic states are often singularly obstinate; and the disorder often leads to stiffness of the joints, from the consolidation of deposits within and around them.

The treatment in the acute state is that recommended for ordinary sthenic rheumatism, and should aim to free the system as early as possible from the *materies morbi*, and to subdue the local manifestations in the joints by soothing applications.

The most successful treatment of gonorrhœal rheumatism is by the administration of iron in large doses, together with a very liberal diet, consisting chiefly of milk, eggs, and other easily digestible varieties of food. The patient should be kept in bed during the acute stage, and the affected joints should be covered by poultices of milk of sulphur and linseed meal, until the sulphur has been freely absorbed into the system. The affection of the urethra should be considered. If there is discharge, very mild astringent injections should be used several times daily; and an injection containing about a quarter of a grain of sulphate of copper to the ounce, with a scruple of trisnitrate of bismuth in suspension, will often be found highly efficacious. If discharge has ceased, it will still be desirable to pass a full-sized silver catheter from time to time, as long as any irritability of the mucous membrane remains. As soon as acute pain subsides, the affected joints should be subjected to well-regulated passive motion; and the whole period of convalescence should be watched over in such a manner as to protect the patient from exposure to cold or damp, or from any indiscretions which might be followed by relapse.

CHAPTER XI.

CONSIDERATIONS ON LONGEVITY.

(Being the substance of a paper read before the West Herts Medical Society, on the 11th of October. 1876.)

The title I have chosen for the paper I am about to read to you is, "On Longevity, and the causes which are antagonistic to it."

It would be superfluous to dwell on the deep importance that belongs to the subject; individually, so far as each of us is concerned; socially, in relation to those that are near and dear to us; and collectively in regard to mankind at large.

The greatest difficulty I have experienced in preparing this paper has been so to condense my matter that I might avoid wearying you by traversing ground with which you are all so familiar, and to present to you, in a concise form, the observations I have to make—the subject being one of such extensive range.

I did contemplate introducing to your notice a list of unexceptionable cases of longevity (which is a very long one,) to show that, notwithstanding the opinion entertained by Mr. Thom and others that centenarians are a myth, there are on record numerous indisputable instances of individuals who have lived beyond a hundred years—and I may mention one who is living at the present

time, Lady Smith, of Lowestoft, who is in her 106th year*—but as the list would have added unduly to the length of the paper, I must ask you to believe me when I say that some people do live to and beyond 100 years. We have to enquire why the mass of mankind die so far short of this period? and, if I can cast a ray of light, however small, to illumine the difficulties which surround the question, I trust you will not consider that time has been wasted in giving me your attention.

You are doubtless all acquainted with the name of M. Flourens, the French savant, who contends that “all mankind ought to live to 100,”—although Haller, the celebrated physiologist, assigned 200 years as the duration to which man’s age *might* be prolonged.

The argument of M. Flourens is as follows:—“You can form a very close approximation of the age an animal will attain, provided you know the time it takes for that animal to arrive at maturity; and by multiplying that period by the figure 5 it will give you the average duration of his life.” He gives numerous examples which he considers establish this proposition, amongst them I will mention two, with which we are most familiar, those of the dog and the horse. A dog takes two years to arrive at its full growth, which time multiplied by 5 gives 10. This age may be far exceeded provided the animal is placed under favourable circumstances; but it is known to be about the average period to which dogs live. The horse is five years in reaching its full growth. That term multiplied by 5 gives 25 years as the ordinary duration of the animal’s life; but horses, like men, rarely reach the ages that they might attain. In the case of the horse premature death occurs from over-work, and in that of man from a combination of adverse causes. Yet the horse, when properly cared for and not over-worked, may attain, under some exceptional circumstances, an age almost double that assigned to it. I know of a horse that reached the age of 45, at which period it was shot—as the owner

* Since this paper was read Lady Smith has died.

did not care to have its front teeth filed for the third time—to save it from starvation. Those acquainted with equine natural history are aware that the front teeth of horses grow to a great length when they become aged, and unless the teeth are filed the animals will be starved. The same result occurs in the ass. Strange to say that the horse I have referred to trotted from Westminster bridge to Sutton—a distance of 12 miles—in an hour, only one year before his death, the driver expecting every instant that the horse would drop down dead; yet it appeared none the worse on the following day. Its body was opened after death, and the heart was found preternaturally large.

M. Flourens then gives a list of animals which attain a great age, beyond 100 years, such as the elephant, swan, camel, etc., and he considers that this list proves the rule which he endeavours to establish; but so far as the elephant is concerned, modern enquiry has shown that an elephant does not arrive at maturity under 20 years, and some elephants now living in India are known to have lived more than 200 years. At last he comes to man. He fixes the age of which man arrives at maturity at 20; this multiplied by 5 gives 100. Most persons would be inclined to say that 25 would be a more fitting age to have fixed for the arrival of man's maturity, but M. Flourens perhaps was afraid of venturing on delicate ground by striving to prove too much.

We must all admire the ingenuity with which the argument above stated has been carried out, and must yield assent to the broad truth conveyed in it; but the question naturally arises, how are we to attain the age which physiology assigns to us in opposition to the inspired writer, who fixed it at 30 years less? We must endeavour to ascertain the causes that prevent the mass of mankind from reaching even 70 years, still less 100!

In recording my individual experience of the termination of human life, it may sound strange when I state, notwithstanding the number of old persons whom I have seen die, that I have not as yet seen one who has died from real old age—in whom the machine, so to speak, has been thoroughly worn out from the lapse of

time—but that in every case the aged have succumbed to some disease, which, if it had occurred twenty years earlier in their lives, would have been quite as likely to have carried them off.

I speak only of what I have seen, and do not for a moment venture to dispute the fact that people do die of old age, although at present it has not been my lot to observe such an instance. I can readily understand in individuals in the lower classes of life who have worked hard through its whole period, who have been exposed to inclemency of weather, and supplied with insufficient nourishment, that one function after another may gradually yield to the pressure; but cases of this kind must be regarded as exceptional, since the individuals wear out long before the time to which they would have lived had they not been exposed to such deteriorating influences.

The classes to whom my observations refer are those higher in the social scale, who have not been exposed to the depressing causes above mentioned, but have been surrounded with the comforts incidental to their more favoured position.

On close attention being devoted to the longevity of men and animals we shall find as a general rule that it depends on a variety of circumstances. In proportion as the one or the other is over-worked, or improperly fed, and where little or no regard has been paid to the laws which govern the health of the man or of the animal, so is each liable to the shortening of the natural duration of life. In the case of those human beings who possess a knowledge of the laws which govern health, and who are guided by those laws, man's existence may be prolonged to a period vastly beyond that which is usually assigned to it.

In a paper on Life Assurance in the *Edinburgh Review*, the average mortality of Europe is thus stated: "In England 1 person dies annually in every 45; in France, 1 in every 42; in Prussia, 1 in every 38; in Austria, 1 in every 33; in Russia, 1 in every 28. Thus England exhibits the lowest mortality; and the state of the public health is so improved, that the present duration

of existence may be regarded (in contrast to what it was 100 years ago) as in round numbers *four* to *three*."

The Registrar-General gives the following Statistical results: "The average age of life is $33\frac{1}{2}$ years. One-fourth of the born die before they reach the age of 7 years, and the half before the 17th year. Out of 100 persons, only 6 reach the age of 60 years and upwards, while only 1 in 1000 reaches the age of 100 years. Out of 500 only 1 attains 80 years. Out of the thousand million living persons 330,000,000 die annually, 91,000 daily, 3730 every hour, 60 every minute, consequently 1 every second. The loss is, however, balanced by the gain in new births.

Tall men are supposed to live longer than short ones. Women are generally stronger than men until their fiftieth year, afterwards less so. Marriages are in proportion to single life (bachelors and spinsters) as 100 to 75. Both births and deaths are more frequent in the night than in the day."

It must occur to most persons on reading these statistics that some glaring faults must exist in order to render the mass of human life of such limited duration. The crass ignorance of the lower orders—their habits and the localities in which they live, may in some measure account for the great mortality that occurs in early life, as it is chiefly amongst the children of the poor that we shall discover that fourth of those who are born who die before reaching the age of seven years; but when we learn that *half* of those who are born die before reaching their seventeenth year the amount does seem prodigious! We are less at a loss to understand so few persons passing their 60th year, six only out of 100 attaining that age, and this notwithstanding the decisive opinion expressed by M. Flourens that all men ought to live to 100!

There is but little improvement in the present day in the increase of longevity. On looking at the obituary of the *Times*, a short time ago, June 27, 1876, my eye was caught by the insertion of six deaths following each other—63, 65, 66, 68, 66, 66. All falling short of the scriptural dictum concerning the life of man.

It may sound very harshly to some ears, when it is asserted that most if not all our illnesses are the result of one of two things, either of our ignorance or of our indiscretion. Our ignorance, in not being acquainted with the laws that govern health, and our indiscretion, when we know them, in failing to yield obedience to them. Nothing can be easier than to test the truthfulness of this painful aphorism if those who hear it will apply it to the cases of the persons with whom they have been intimate, and who have died long before their time. They will usually discover that some imprudence has been committed by the individual, either for a longer or shorter time; he may have indulged too freely in the pleasures of the table, abandoning the exercise which was formerly customary to him; he may have become a daily or nightly spirit drinker,—one of the most undermining habits that can be pursued even although it may not appear to produce any ill effect for a time. He may in fact have transgressed the majority of those laws which govern our health; in some instances knowingly, in others unconsciously, the result, however, always being the same.

Excess in eating, in drinking, in fasting, in smoking, may all prove factors in the shortening of the duration of life, as well as undue exposure to cold with an insufficient amount of clothing: but, perhaps the most fertile source of all causes is neglect of the signs of coming diseases, with which nature in her beneficence invariably furnishes us. If we allow these signs to pass by or to escape us, without attempts at correcting what they indicate, a downward progress is suffered to continue which might otherwise, perhaps, have been long retarded.

An innate consciousness generally tells us when we have been doing wrong, but we seldom admit the error until we have suffered in some manner from the infraction of nature's laws—often only when it is too late. A striking instance of this kind occurred in my practice some years ago. A friend of mine who was a free liver, and who entertained a great dislike to medicine, was seized by paralysis of his left side one night whilst at dinner, when about to raise a tankard to his lips, and

rapidly became unconscious. His unconsciousness lasted for three days. At the end of that time I was standing by his bed-side feeling his pulse, when his consciousness suddenly returned. He looked up, and gazing at me for a minute he said, "Hood, I'm an awful example of not taking proper medicine at a proper time."

It is not improbable that as many lives are lost from ignorance as from indiscreet management of the health and habits.

I will mention some cases in point.

The late Mr. Constable, R.A., was a most abstemious and healthy man. He left his home at Hampstead one morning directly after his breakfast, and went to London, where he was engaged the whole day in an energetic endeavour to establish a pictorial exhibition antagonistic to the Royal Academy. He returned home late in the evening, having taken nothing since his breakfast. He enquired of his housekeeper what she had in the house for him to eat. She replied that she had nothing but some cold vegetables—carrots and turnips. Such an announcement, to any but a Norfolk or Suffolk man, would have been regarded as equivalent to having nothing to dine upon; but the intelligence was not unacceptable to Mr. Constable, who said he would eat them with his tea. Shortly after he had finished this strange meal he was seized with a violent pain at the pit of his stomach. To relieve this he took a dose of rhubarb and magnesia; but this only increased his suffering. The housekeeper became alarmed and ran off for medical assistance. She secured the attendance of Mr. Evans of Hampstead, and on their arrival at the house they found Mr. Constable was dead. A post-mortem examination showed that his internal organs were in the most perfect health, and Mr. Evans truly observed that a timely pat on the back might have saved his life. A mustard emetic, or a glass of hot brandy and water which probably might have acted as an emetic, would almost certainly have done so.

Mr. Constable was not aware that cold vegetables required all the aid of a vigorous digestion and of unimpaired nervous power to render them safe food after a long day of fasting and waste of nervous energy.

Another celebrated artist, Mr. John Varley, met his death in a somewhat similar manner. He had fasted the whole day; and, on his return home in the evening, he ate very hastily—which he was in the habit of doing—two thick pork-chops. He had in fact bolted them, scarcely having chewed them. He became suddenly insensible, and died very shortly after his meal. On examining his stomach after death large pieces of the pork an inch in length were found. Mr. Varley, like Mr. Constable, had fasted too long, and impaired the nervous power of his stomach, which by reflex action paralyzed his heart, and stopped his circulation.

The late Duke of Wellington died from an attack of indigestion occasioned by eating too largely of venison.

The late Mr. F———, M.P. for P———, once very nearly met his death from eating too much boiled beef, but a timely emetic saved him.

I will mention one case illustrative of the advantage to be derived from the effect of vomiting when the stomach, brain, and heart have become paralyzed from indigestible food. I was hastily summoned one evening, some years ago, to go to the Dowager Lady C. The messenger was her coachman, who said he was afraid his mistress was dead. When I arrived at the house I found that a medical man had been called in who lived close by. He was standing at the back of Lady C's chair, which was a high-backed, old-fashioned one, against which she was leaning. On seeing me, he shook his head, and said, "Her Ladyship's gone!" She looked as if she were dead, her face was deadly pale, and cold as marble, her jaw had dropped and she had all the appearance of a corpse. I felt her wrist, and detected the faintest beat of a pulse—like the vibration of a fine cambric thread. I inquired what Lady C. had had for dinner. She had made her dinner entirely off hashed hare. Her daughter-in-law was at her side, and I asked her if they had any brandy in the house. Fortunately they had. It was brought, and I poured a large wineglassful of it down lady C's throat, as one would pour water into a jug. It entered her stomach, without any effort of deglutition on her part. No

sooner had this been swallowed than consciousness instantly returned—she gave a start—and exclaimed, “Bring me a basin.” One was brought, and she at once ejected her undigested meal into it. Lady C. then recognised me and remarked “What can bring you here at this time of night?” I answered, “Your ladyship was ill.” “I never felt better in my life,” she replied. Lady C. was then 80. She lived for many years after this event.

It is an historical fact that the first Napoleon very nearly lost the battle of Leipsic from a severe attack of indigestion after eating heartily of a roast leg of mutton, stuffed with onions. His agony was so great that he rolled on the ground in his tent. The fit, however, passed off, and although previously incapable of giving any command, he at once issued those orders which resulted in success.

To a certain extent cases like these may be regarded as exceptional, being prompt in their termination, but as the statistics of mortality show, death does not confine itself to threescore and ten years, the majority of mankind dying long before that period is reached. The causes producing this result have been referred to, but being comparatively slow in their operation their effects are not noticed sufficiently early to enable science to check them. It is therefore a subject of the most vital importance to ascertain why it is that the average duration of life is so much more limited than it ought to be, and, if we can, to learn what are the prevailing causes that produce this limitation.

It has been said that the causes are numerous, but two amongst them are the chief—namely, excess in eating and drinking; neither one nor the other approaching gluttony or inebriation, but being simply the daily practice of consuming more food than the system requires; and the habit of indulging daily in drinking spirits.

Jeremy Taylor asserted, generations ago, that “the majority of mankind dug their graves with their teeth,” and it is most unsatisfactory to be compelled to admit that mankind, since his day, continue very much the

same practice, with the fatal addition of also indulging in the use of spirits, which were not the familiar beverages then which they have since become.

It cannot be said as a rule that gluttony prevails in the present day, although at times most of us are guilty of what the late Mr. Abernethy warned us against, "putting more into our ovens than our ovens would bake," but our chief fault is that we are prone to indulge in too great a variety of dishes; eating sparsely of each, but at the termination of a meal producing an aggregate which is beyond the power of the stomach to digest with facility and rapidity. We then feel the want of an aid to digestion, or think we do, and more or less stimulant of a vinous or spirituous kind, is resorted to. Now, an *occasional* excess of this nature may not prove detrimental to the system, but the frequent repetition of it is certain to be so. There can be no question that the plainer the food we eat, when well and properly cooked, and taken in moderation at *proper intervals*, the more favourable will it prove to the longevity of the individual. Doubtless, French cookery has its charms; and its advocates speak of the readier digestion that attends the consumption of the dishes so prepared; but if we take into consideration the duration of life of those to whom such dishes are familiar we shall not discover that these persons can be cited as in any degree remarkable for their longevity.

It must, however, be admitted that in a comparison between constant indulgence in French cookery and eating to excess off a plain joint, the verdict of safety as to the ultimate consequences may incline to the former.

Our chief object should be, whatever may be the nature of our diet, to eat sufficient and no more than we require. With many, however, this may prove very difficult advice to follow, for they either cannot, or will not, to use a commercial phrase, take stock of their stomachs and learn whether the supply exceeds the demand.

There is a prevalent error amongst men whose vocations are confined to cities, and whose time is

absorbed in attending to their duties, that if they make a good breakfast they can go through the day, taking perhaps a biscuit with a glass of sherry, and fast until dinner time in the evening.

A young man of temperate habits who has inherited a good digestion may for a time succeed in doing this; but he will find, as his life wears on, that he must change his plan. The long fasting may lead to one of two dangers: either by the time the dinner hour arrives the appetite has become too keen, so that more food is eaten (and that perhaps too quickly), than the system requires, and a foundation is laid for indigestion or dyspepsia, with all its horrors and discomforts; or, perhaps owing to the annoyances that occur in business, the mind may have been worried, and from too long fasting the stomach may become enfeebled in its nervous powers, all appetite for food has departed, and a craving for stimulants will then probably arise to overcome the feelings of depression and anorexia.

The Portuguese have a proverb, that "you should never allow your daughter to marry a man who does not make a good breakfast." The wisdom of the advice is manifest, for no man can persistently make a good breakfast who has sat up half the night gambling and drinking; but it will be seen from the previous remarks that circumstances alter cases, and that which may be done by a young man who is devoted to out-of-door exercise is no guide for a man of middle-age, or one beyond that period, whose career is confined to professional industry, or to commercial pursuits, with their attendant anxieties and responsibilities. The course for such men to adopt is a reversal of the proverb. They should make a light or *bad* breakfast, consisting of an egg or broiled bacon, and should eat in the middle of the day a luncheon, of roast or broiled meat to the extent of five ounces, with a crust of bread, and half a tumbler of water. This simple form of diet will entirely prevent the ill consequences that result from too long fasting, and from permitting the stomach to lie fallow for too lengthened a period, which is a sure way of diminishing its digestive power. When the

dinner hour arrives there will be less danger, after such a luncheon, of eating either too largely or too hastily.

The observation that more persons kill themselves by over-eating than by over-drinking is one which has been frequently quoted. My experience of men's habits leads me to dissent from this assertion. It is true that a man cannot go on for many years eating largely, unless he takes a vast amount of exercise, (a practice which ultimately has its limits), without drawing down upon himself consequences in the form of gout, rheumatism, or some kindred affection. This visitation will probably put a stop for a time to his excessive eating. He may or may not "have laid the foundation" of some organic disease from a lengthened continuance of over-feeding; but, if his body has increased in size from the excessive formation of the fat globule, the corpulence may for a time preserve him from more serious changes, just as it occasionally befriends those who take stimulants to excess. It will not, however, preserve him from the danger of an apoplectic seizure when he has passed the meridian of life, although to such an attack the man of spare habit is also liable.

As a rule, large eaters are not large drinkers; the effect of the constant use of stimulants being to blunt the appetite. I have known men even pride themselves on the smallness of their consumption of food, who have been given to excessive indulgence in stimulants. It was not uncommon in the last generation for some men to boast of the quantity they could imbibe. I remember one instance of a gentleman of this class, who said on one occasion, "I cannot eat, but it would do your heart good to see me drink!"

The marvel is that the human race can continue the liberties which so many daily take with themselves, and yet survive. This fact strongly points to the wonderful construction and organisation of the body; and must convince us that such a machine, with ordinary care on our part, is capable of a duration indefinitely longer than that which the mass of mankind attain.

We never fully appreciate the blessing of perfect health until it is lost, and then what would not a man give to regain it? I remember being much struck with an observation made to me by an old Jew, eighty-five years of age, who was a great sufferer from dry gangrene of the feet. He was deploring his loss of health and power of locomotion, and exclaimed in his broken English; "Oh! Sir, helt is de greatest blessing in de vorld! Vat is all de welt of the vorld vithout helt? Helt first, and welt afterwards!"

Of all the causes which are antagonistic to longevity, there is none greater than indulgence in the daily habit of spirit drinking; none that more surely and fatally undermines the health and strength of the individual, and consigns him to an early grave, unless he happens to possess a vigorous constitution; and even then, although he may be able to reach the middle period of life, he will, in the vast majority of instances, have laid the foundation of some malady which, if his life is prolonged, will embitter the remainder of it by the production of hepatic, prostatic, or some other form of glandular disease. And yet such a person may not be entitled to the character of an inebriate, for it is more than probable none of his friends have ever seen him "the worse for drink."

In corroboration of my view of the mortality arising from drinking, I will quote a paragraph from the *Lancet* of July 8th, 1876, which contains the experience of our intelligent friend, Mr. Shaw.

"An official inspection was recently made of the Leavesden Asylum, where there are over 2000 imbecile paupers. While the visitors were in the female side of the building, Dr. Shaw, the medical superintendent, expressed his belief that quite a third of the inmates were persons who had been reduced to imbecility through the effects of intemperance. Those who know anything of the class from which these patients are recruited will feel that Dr. Shaw was moderate in his computation."

It is hard to believe that men would so readily fall into this habit, if they knew the certain but some-

times remote danger consequent on the practice. If they had been instructed in physiology and in the chemistry pertaining to the human body, they would avoid the practice as they would poison. Not but what spirit, like opium and other powerful drugs, is a most valuable remedial agent when the vital powers are at a low ebb; but it is when used as an ordinary article of diet that it becomes a source of danger.

When we know that upwards of thirty-two millions of money are annually received by Government as duty on spirits and fermented liquors, twenty-two millions on spirits alone, we cannot feel surprise at the crass ignorance which prevails, from the highest to the lowest, with regard to the injurious effects of alcohol; for it may be asked whether any Chancellor of the Exchequer would rely for nearly one third of his annual revenue upon such a source, if he were aware of the destructive nature of the material from which it is obtained.

It is generally known that the effects of excessive drinking fall upon the liver; but the mode in which this occurs is not so well understood. If it were, most men would hesitate before they indulged in a practice which ultimately leads to the most serious consequences, besides shortening the duration of life.

Nothing is more common in the middle ranks of life—for as a rule the higher classes do not make a practice of drinking spirits—than for men to express astonishment when told that the daily or nightly habit of taking a single glass of spirits and water will ultimately produce a deteriorating influence on the body, will tend to the shortening of life, and will lay the foundation of organic disease. Spirits have not been inaptly styled liquid fire; liquid carbon would perhaps convey a more just idea of their nature, for it is hard for those unacquainted with chemistry to recognise a liquid as being composed of fire, although the proof may be readily afforded by exposing spirits to a flame, when instant ignition follows.

Even those persons who possess but a very limited knowledge of chemistry are doubtless aware that the purpose of inspiration and expiration is, in the first

place, to inhale oxygen, and, in the second, to expel carbon from the blood by the lungs.

The oxygen contained in the inspired air unites with the carbon contained in the blood, and is expired in the form of carbonic acid. The purer the air we inhale, the more perfect will be the combustion of the carbon contained in the blood. When, from any cause, such as great impurity of atmosphere, mechanical difficulty of breathing, organic disease of the heart, asthma, etc., etc., the balance of inspiration and expiration is disturbed, an excess of carbon is retained in the blood, and operates as a poison in the system. The face in the first instance is flushed, a dusky hue succeeds to this, followed by extreme pallor, blueness of the lips, etc., and it is not until the lungs have re-established their function that the oppression of the circulation is removed. The lungs, however, are not the only organs concerned in the purification of the blood from carbon; the liver being a most important auxiliary in the performance of this vital function.

If such results occur in extreme cases from the retention of carbon in the body, it is not difficult to comprehend that the persistent imbibition of an excess of carbon in a liquid form, must eventually prove prejudicial to the working of the animal machinery; and that the integrity of the various vital organs, the heart, brain, liver and kidneys, must ultimately be involved in disease from the imperfectly oxygenated blood with which they are supplied,

The vessels which convey the blood will first of all become impaired in their tenacity; next the membranes or cellular textures in which every organ is enveloped; and then will follow deterioration of the functions of those organs, ending in organic disease.

I was for a long period at a loss to account for the power of many elderly persons to resist the noxious influence of taking a considerable amount of spirits daily, until I discovered that these persons, without exception, had a relaxed state of bowels, by which their blood was relieved of a redundancy of carbon which neither their lungs nor their liver could by any

possibility have removed. This relaxation enabled them to continue the habit of drinking, and yet to live on.

The example of their apparent freedom from danger was frequently most disastrous to their younger associates; who, being in ignorance of the secret on which the power of taking spirits in large quantities depended, would naturally copy the practice of their seniors, whose libations would extend far beyond anything in which their imitators would be likely to indulge.

In condemning the practice of spirit drinking I would wish to be distinctly understood (as I have before remarked) that I regard alcohol as of the utmost value as a *medicine*; but that it should never be resorted to excepting as a remedial agent for the prevention or the cure of disease; and that, in the absence of either of these reasons for its employment, the practice of taking alcohol should be abandoned. It is hardly necessary to observe that a remedy, which proves so valuable for the prevention or cure of disease, cannot as a rule be a safe one to employ constantly. I do not hesitate to assert that the prevailing habit of spirit drinking is the most fertile source of the limit to longevity which exists in the present day, and that the very limited average of mortality, 45 years, is mainly owing to this and to kindred causes.

It is too often the practice of medical men to recommend their patients to abstain from wine and malt liquors, and to substitute whisky or brandy as their ordinary beverage. For this advice there is no doubt frequent necessity, and there can be no objection to it, provided it is accompanied by an injunction to abandon the habit as soon as the necessity for it ceases; but the misfortune is that the habit of drinking spirits soon becomes confirmed, and is continued long after medical attendance and supervision have ceased, the patient concluding, naturally enough, that what he was recommended to take by professional authority cannot be injurious if persevered in. It is probable that in some instances if there were strict adherence to the limited quantity of alcohol prescribed by a medical man as an

aid to digestion, the individuals thus prescribed for might not suffer material damage from a continuance in its use; but I fear these instances are rare. Occasions frequently arise which induce the patient to exceed the quantity recommended; and, as he does not experience any immediate discomfort, he deludes himself into the belief that he cannot be doing himself injury.

I would not have it inferred from the strong observations I have advanced against the habit of drinking spirits that, I am what in the vernacular is styled a "Teetotaler." Far from it; for I hold that for the majority of men who are engaged in the arduous career of life, and for those upon whom age is telling by signs of failing powers, the moderate and daily use of a stimulant like *wine* is of inestimable advantage. Individuals who possess strong and vigorous hearts may dispense altogether even with wine, and it may be regretted that such persons are not more numerous; but it is not fair to assume that all others are as happily constituted. If men would limit their consumption of the wine which agrees best with them to three glasses, they would rarely suffer inconvenience from this quantity; but on the contrary they would find it a most valuable aid to digestion, and would rise from table with the assurance that they had not behaved ill either to their stomachs or to themselves.

I have known many men who have been large wine drinkers, but I cannot call to my remembrance a single instance of the habit having tended to the shortening of life when spirits were refrained from. It is, however, possible that if these persons had drunk less they might have lived longer. The ordinary result of taking wine to excess is, as is well known, the production of gout, but this in some cases may be regarded as a valuable monitor, and if the disease is properly treated, and not smothered or checked by the use of colchicum, experience would lead to the conviction that it will rather assist than hinder the attainment of longevity by those who will drink more than they should do.

We hear a great deal concerning the drinking of a bye-gone age, which was marked by the feats of two and three bottle men; but if we examine the practice of numbers in the present day, we shall find that they are not far behind their ancestors. The aggregate amount of sherry, hock, champagne and claret that is placed upon a modern dinner-table gives a fair idea of what is consumed. The men of former times, as a rule, confined themselves to one description of wine—either to port or madeira—sherry being comparatively a more modern introduction—and not an improvement. Their wind-up was frequently punch—in the present day it is Bass, or brandy and soda—both noxious, although the latter may be least so.

I could give many instances of cases within my knowledge of men who drank daily a large quantity of wine, and yet lived to an advanced age. One will suffice,—the late Lord Eldon drank a bottle of port wine every day, excepting on Sundays, when his brother, Lord Stowell, dined with him—and then they always drank four between them. The only ailment Lord Eldon suffered from was gout, but, as he was most judiciously treated for that complaint, it did not prevent him from living to between eighty and ninety.

No person has striven harder and written more forcibly to enlighten mankind on this subject, than Dr. Benjamin Richardson, both in his Cantor Lectures and in his admirable work on “The Diseases of Modern Life.”

At page 203 in his *Physiological Proem on Alcohol*, in *Diseases of Modern Life*, he says, “To have to speak of diseases originating from the use of a fluid which, next to water, forms a part of the daily beverage of immense populations of civilized people seems a satire on civilization. It is nevertheless the duty of every physician to speak plainly on this subject, because it is his painful task, day by day, to treat the most terrible and fatal diseases, for the origin of which he can assign no other cause than the use of alcohol.

“It adds to the pain of the physician, while he makes these observations, to feel that when he calls to his aid the study of physiological laws, he can find no place for

alcohol as a necessity of life. He contemplates its action on living function to discover that it supplies no force to living matter, and no new matter, that is of natural character, for the construction of organized tissue.

"In whatever direction he turns his attention to determine the value of alcohol to man, beyond the sphere of its value as a drug which he may at times prescribe, he sees nothing but a void: in whatever way he turns his attention to determine the persistent effects of alcohol he sees nothing but disease and death; mental disease, mental death: physical disease, physical death.

"We approach most safely to the facts of the injuries that are induced by alcohol, through the study of its physiological action; the part it plays when it enters the living organism. In whatever form it enters, whether as spirit, wine, or ale, matters little when its specific influence is kept steadily in view. It is as alcohol in its pure form, as the ardent spirit of the old writers, the ethylic alcohol of modern chemists and the basis of all our common intoxicating drinks, that it is best studied. To say this man only drinks ale, that man only drinks wine, while a third drinks spirits, is merely to say, when the apology is unclothed, that all drink the same danger."

It is probable that many persons consider Dr. Richardson's denunciations of all alcoholic drinks too sweeping; but no one can dispute the truthfulness of the various pictures he has given us of the different diseases produced by drinking alcohol, although he does not attempt to discriminate between the dangers of drinking ardent spirits or pure alcohol, and wine or ale.

Experience teaches that when the two latter beverages are taken in moderation they are of infinite use in assisting digestion, in overcoming the effects of mental and bodily fatigue, and in sustaining the strength of the nervous system. The same cannot be said of spirit, pure alcohol, which is doubtless a decided stimulant, but like all stimulants its effects are more or less temporary, and are followed by depression.

Dr. Richardson, however, denies that alcohol is a stimulant to the heart's action, and asserts that it weakens the contractile force of the minute vessels which the heart fills with blood at each of its strokes. He observes at p. 218, "These bodies produce, in fact, a paralysis of the organic nervous supply of the vessels which constitute the minute vascular structures. The minute vessels when paralysed offer inefficient resistance to the force of the heart, and the pulsating organ thus liberated, like the main-spring of a clock from which the resistance has been removed quickens in action, dilating the feebly-resistant vessels, and giving evidence really not of increased, but of wasted power."

If this theory is correct it is difficult to comprehend the effect which alcohol produces in some cases of hemorrhage and of exhausting diseases in which, when the vital stream is reduced to a minimum, and the pulse at the wrist feels like a fine thread, death would inevitably follow if it were not for some propulsive power superadded to the heart's action. Experience teaches us that alcohol in its pure form is then the readiest remedy for restoring action to a paralyzed heart, and thus overcoming the stasis of blood which threatens to end in death.

Dr. Richardson's observations may apply to the cases of confirmed drunkards, or those who take spirits to excess, but not to persons who are not in the habit of resorting constantly to stimulants.

Dr. Richardson sums up the penalties of taking alcohol by giving us a list of the diseases consequent on its use. These are, he says :—

1. Disease of heart.
2. Alcoholic consumption.
3. Disease of liver, producing.
4. Diabetes.
5. Disease of kidney. Calculus.
6. Diseases of the eye.
7. Insomnia.
8. Diseases of nerves.
9. Epilepsy.

10. Paralysis from alcohol.
11. Dypsomania—
Mental alienation—Mania a potu.
12. Delirium Tremens.
13. The hereditary transmission of disease from alcoholics.

This list is a long one, but it might be greatly extended, and might include diseases of the brain; of the bladder, together with prostatic enlargement, that frequent source of misery to the aged; and skin diseases, many of which may arise independently of the practice of drinking, but which are all of them aggravated by it.

Now that I have endeavoured to describe some of the calamities that arise from excesses in eating and drinking, it is fitting to refer to smoking, which is perhaps *the* most prevalent indulgence or luxury of the present day.

The practice of smoking tobacco, when carried to excess, is productive of baneful consequences, and this is more especially the case, and the results are more rapidly developed, if the habit has been acquired before the body of the smoker has ceased to grow, or has arrived at its full maturity. If smoking has not been practised before this period, and is only moderately indulged in, I do not think it is prejudicial. If, however, a youth begins to smoke at an early period, or almost before puberty has arrived, the results cannot be otherwise than most injurious. Smoking will then retard the growth and development of the body, will impair the action of the heart, and will lay the foundation of one or other of those numerous maladies which are comprised under the head of neuroses, or nervous diseases. Nor is it at all difficult to comprehend the manner in which tobacco produces such effects.

When the habit of smoking has once been acquired, and the neophyte no longer dreads the marked symptoms of poisoning which he experienced in his first essay, the nausea and vomiting, followed by more or less prostration, tobacco appears to act as a grateful stimulant, and to be followed, as all stimulants are, by more or less depression—call it calmness if you will—it is the result

of a diminished power of the heart's action—hence the soothing influence it conveys to the overstrained or overworked nerves. And, if smoking were confined to the realization of this desirable result, and were only used medicinally, instead of being made a daily practice when not really called for, it might be considered a valuable therapeutic agent; but the same objection applies to constant smoking as to the habitual consumption of alcohol.

To the young more especially the practice of smoking is fraught with danger, for we all know that whatever agent interferes with the due propulsion of the blood by the heart, interferes also with the growth of the animal machine—whether such an agent be impure air, deficient nourishment, or the direct application of a sedative like tobacco.

Dr. Richardson is of opinion, and I entirely agree with him, that the prolonged inhalation of tobacco produces very marked changes in the blood. The fluid is rendered thinner than natural, and in extreme cases paler. The effect on the blood globules is to change their shape. These globules have naturally a double concave surface, and at their edges a perfectly smooth outline. They become oval and irregular at their edges, and instead of having a mutual attraction for each other,—a good sign, within certain limits, of their physical health,—they lie loosely scattered, rendering an individual who possesses such blood physically depressed, and deficient both in muscular and in mental power. It is, however, encouraging to observe how quickly the blood will regain its natural characteristics. One day of abstinence is often sufficient to permit the poison to escape, and to restore the fluid to its natural aspect. This condition of blood, however, renders those in whom it exists liable to sudden dangers from comparatively trivial causes. I have recently seen a gentleman, aged twenty-three, who is a confirmed smoker. He played at lawn tennis and became very hot, was careless of himself and got a chill when the game was over. On the following day he felt so weak that he could scarcely walk, and his throat was so

swelled that it was with difficulty he could swallow. When I saw his tongue it presented the peculiar appearance, very difficult to describe, of extreme blood degeneration. His pulse was feeble, and he had a total loss of appetite, yet he assured me that when he began to play he had never felt better in his life, as he had been living in the country for some weeks.

The smoker's sore throat is familiar to most medical men, and can only be cured by abandoning the practice of smoking. There are, indeed, few organs of the body which can be said to remain uninfluenced by the habit. It is, therefore, one of the causes antagonistic to longevity when prematurely indulged in, or when carried to excess at a more advanced period of life.

Having gone rapidly over some of the chief causes unfavourable to longevity, it is time to consider some of the many by which it may be promoted.

There can be no question that those men who from necessity or inclination continue to employ their brains, and keep their bodies in exercise, exhibit the best types of a vigorous old age. The instances illustrative of this fact are numerous. It is sufficient to mention such names as the late Lords Lyndhurst, St. Leonards, and Brougham. The first of these illustrious men, when near ninety years of age, gave one of the most profound and elaborate judgments that had ever been heard in the House of Lords. Nor were the two latter less conspicuous for maintaining to a similar period their vast mental powers.

The brain, like the muscles of the body, will suffer when allowed to rest. An extreme case of the muscular wasting thus produced is that of the Indian Fakir, who retains his limbs in a fixed position until the joints become fixed or ankylosed. I knew an old gentleman of eighty-seven, who was so well aware of this liability, that, on rising after he had sat for some time, and on experiencing, as elderly persons frequently do, a stiffness in his knees, he would appear to be very angry with these joints for their stiffness, and I have often seen him give both his knees on the inside and outside a smart blow with the palm of his hand, exclaiming at the same time, "Drat you! what do you mean!"

As a rule, next to a due employment of the mental faculties, nothing is more conducive to perfect health than daily exercise on foot or on horseback. Yet there is no habit so easily relinquished, or so difficult to resume when once fairly broken in upon. The marvel is that so many people *seem* to do so well without it. When men are engaged in the busy turmoil of active life, the strain on the brain and nervous system appears to be sufficient to burn up the effete materials of their bodies, and to compensate for the want of direct muscular exertion. The injurious effects of abandoning exercise occur to those who are devoid of occupation, who still retain the same amount of appetite, and gratify it as of yore, without reflecting that the same amount of food cannot be safely indulged in under such altered conditions. We act more wisely with our horses than we do with ourselves—we cut off some of their corn when they are not working. There is, however, no rule without an exception. It was well known to the friends of a gallant colonel, who died a few years ago, that after the period of middle life when gout affected him, he was never known to walk more than a mile at a stretch, and that very seldom. Yet he lived to ninety-one. The colonel sought the aid of medicine to compensate for failure of exercise.

Exercise, however, like many other valuable hygienic practices, may be readily carried to excess; and mistakes and injurious results are of frequent occurrence from this source. The maxim that should be our guide is—“Take exercise *short* of fatigue,” for when fatigue or exhaustion occurs, the good effects of exercise are to a certain extent dissipated. Men resort too often to stimulants to overcome the sensations consequent upon an over-tired heart; whereas, if they adopted the simple practice of reclining in the horizontal posture for ten minutes, so as to allow the blood to flow on a plane, and thus to revive the exhausted mechanism of the circulating organ, they would rise up refreshed, and would not feel the want of any artificial aid to increase the power of the heart's action.

It is, however, rare to see people of very advanced age persevering in exercise, and it is a very difficult matter when once they have relinquished the practice to induce them to return to it. One rather remarkable instance, to the contrary occurred to me some years ago. One of the handsomest old ladies I ever remember to have seen came up from a town in Berkshire to consult me about her health. She was then eighty years of age. On visiting her at the lodgings she had taken in one of the streets out of the Strand, I found her in bed in a room which was scarcely penetrated by a single ray of light. I asked permission to open the shutters, that I might see her. She begged me to allow as little light to enter as possible, as "the light affected her eyes." She was in a highly nervous state, and I failed to glean much information on this visit as to what really ailed her. On taking leave I said I would prefer seeing her when she was up and dressed, and that I would call on the following day. I did so, and found myself in the presence of an apparently enormous woman. I soon discovered that her great size did not arise from excessive corpulence, and on inquiry found that it was chiefly due to the amount of apparel which she wore. She had on seven petticoats—two of them of flannel—besides her outer garments. She said she felt compelled to wear them because she was so susceptible to cold. She had no disease of any kind. She was of highly nervous temperament, had a good appetite, and never took any exercise. I told her she would lose all the numerous feelings of discomfort of which she complained if she would make up her mind to leave off her excess of wearing apparel (which it would have been impossible for her to walk under,) and to take exercise. With some little difficulty I prevailed upon her to act upon my suggestions; and, to show the amount of reliance to be placed on her word, after having promised me that she would take a walk every day, some of her friends met her in the Strand, walking in a snow storm. They expressed astonishment at seeing her under such unusual circumstances, but she told them quietly that I had directed her to take a

walk every day excepting when it *rained*, and that snow was not rain. This old lady entirely lost her nervous feelings and apprehensions, and lived to considerably over ninety.

Judging from the instances of which I have known and heard, of men who have reached an advanced period of life, and who have made it their practice both in winter and summer to indulge in cold bathing, it would appear that under favourable conditions cold bathing has contributed to longevity. This is, however, a mode of procedure which requires judgment for its adoption, since much will depend upon the integrity of the heart and circulation, and upon freedom from any organic disease. That cold bathing does contribute to health cannot admit of doubt, provided the above conditions obtain; for I have heard those who have relinquished the habit complain that when they did bathe in cold water every morning they never knew what a cold was, but that when they ceased to do so they were constantly liable to catch cold.

No maxim is of more value than the classical one, *veniente occurrito morbo*—anticipate the coming disease—both for preserving the health and for conducing to longevity. How many valuable lives might be prolonged if the knowledge of the importance of attending to the *first* indices of failing health were diffused! So many of these indices are unconnected with pain that the mass of mankind, who do not, or will not, believe that there is anything radically wrong with them when free from pain, although conscious they do not feel as they ought, will yet persevere in their ordinary habits of life, and will not seek professional advice. If, however, *pain* should be present, they become intolerant of it, and are less tardy in asking for its removal. Pain, of course, may be a valuable index that something is wrong, but there are many symptoms which are more important, although from the absence of pain they are but little regarded.

This is not the place in which to enter upon the wide field of symptomatology, but reference may be made to some of the most marked deviations from

ordinary health which are witnessed in individuals who have passed the meridian of life. It is then common for persons in the more wealthy classes to become subject to certain irregularities of digestion and circulation, the result, in the majority of instances, of consuming an undiminished amount of food, while taking a diminished amount of muscular exercise. The machinery of the body, so to speak, becomes clogged; and the breathing is not so free in ascending rising ground, or on sudden exertion, as formerly. The action of the heart becomes easily accelerated, and although a short rest usually will remove this discomfort, yet exercise, which formerly was attended with pleasure, soon becomes repugnant, and is consequently avoided, easier methods of locomotion being resorted to. This habit insidiously creeps upon men as age advances, and it is one that cannot be too jealously guarded against. It is sufficient to observe the career of men advanced in life to whom exercise is a necessity, in order to realize the fact that, if there is the *will* to maintain a system of regular exertion, the human body is not only equal to it at a very advanced period, but is all the better for it.

It is far too frequent, when men have reached the age of seventy, for them gradually and almost imperceptibly to drift into habits of indulgence, and to solace themselves with the idea that, as they have accomplished their seventieth year, they should change their habits of life and should take things *easily*. This change is frequently attended by disastrous or fatal results. Age, after all, is comparative, for if a man has been prudent and active in his earlier years, he has no right to conclude when he reaches seventy that his condition is analogous to that of a person whose previous life has been one of indulgence and imprudence, and who presents the marked characteristics of senility. At this time I am not able to refer to the source from which I obtained the description of a so-called Quaker's disease, but it will serve to illustrate the danger of too decided a change in previous habits of life. When Quakerism was more common than it is

now, it was the ordinary custom for men of this persuasion who were engaged in business, to retire from it about the age of fifty. From their inexpensive mode of life they had generally amassed sufficient money to render them independent of further occupation. Their social habits were very restricted; they ignored theatres and all places of amusement; they equally condemned novels and light literature, and their chief enjoyment was their pipe and their newspaper. Their habits became, however active before, decidedly sedentary, and as it did not seem to them requisite to diminish their customary amount of food, they very naturally became what may be described as stall-fed. Their livers grew large, and they experienced all the miseries and consequences of undue repletion, from failure of sufficient exercise. Hence a Quaker who had reached the age of seventy was considered a rarity, and in large commercial towns the *Morbus Quakeri* was by no means uncommon.

Some men, of a leuco-phlegmatic temperament, when they have reached the age of seventy, appear as if they would collapse from the very fact of the achievement. Such an one was a late well-known Sergeant-at-Law. He was a lusty, well-favoured man, but of a desponding nature. I had occasion to call early one morning to see his wife, and met him on the stairs. I said, "Good morning, Sergeant, how are you?" "Do not ask me how I am," he replied, in a most melancholy tone of voice, "this day I have reached the period allotted to man, I am threescore years and ten." "What of that," I said in a cheerful voice, "there are fifteen good years in you yet." He stopped descending, and said with some animation, "Do you think so?" "I am sure of it," I replied. "Oh, thank you," he immediately rejoined, "I believe I am pretty well." The sergeant lived to 84. This interview might or might not have contributed to his longevity, but it is worthy of remark that he never again spoke to me on the subject of old age.

It has been said that the life of man consists of trifles, and there is some truth in the observation, as

well as in the fact that what appears a trifling departure from a customary habit is not really so.

One of the common results of old age, except amongst military men, is a rounding of the shoulders, and a consequent projection of the head; the effect of which is contraction of the chest, and consequent impairment of the breathing: this is entirely a mechanical result, and may be avoided if the injurious consequences of the habit of stooping are pointed out to the individual.

Diminished use of employment of the muscles in any part of the body tends to diminish their volume and to produce relaxation and loss of power. It is from this cause that the muscles at the back of the neck become enfeebled as age advances, and fail to support the weight of the head; but, if the *will* is called into operation and the encroaching defect is met with decision, it may be overcome by a steady persistence in holding the head erect. It is said that the late Duke of Wellington wore an artificial support at the back of his neck to assist him in this endeavour.

The heart, although it is an involuntary muscle, requires the stimulus of exercise, like the muscles that are under the will, to maintain its integrity. Without this stimulus it is prone to flag, and then all the different organs of the body will suffer from imperfect circulation. Cold has a very depressing effect upon the action of the heart, and is consequently most inimical to old persons and young children, in whom it should be carefully guarded against, even when they are capable of taking exercise. The occurrence of chilblains in those who possess a feeble circulation is a familiar instance of the external effect of cold. The unseen results, however, of a languid and defective circulation of the blood are of vastly more importance than those which meet the eye; and it is not too much to assert that many diseases of an hereditary type owe their appearance in one or more members of a family, consumption more especially, to this fact not being appreciated. It is the glandular organs of the body which suffer most when the circulation is impaired; the liver being the chief amongst them;

and this observation applies with equal force to the old and to the young.

The circulation of the blood through the liver, the portal circulation, is only second in importance to that of the heart itself; for if any interruption to the due transmission of blood takes place in the liver from congestion, enlargement, or any cause of nervous irritation, there must also be a failure in the due supply of blood to the right side of the heart, and any one or more of the various symptoms indicative of cardiac derangement may be established. Such results I have repeatedly seen in elderly persons, and unless the cause had been recognized, fatal consequences might have followed.

An illustrative case may not be devoid of interest. Six years ago I saw a gentleman aged 80, whose health had been failing for some time. He had lost his wife under very distressing circumstances a few months previously, and the loss had produced great mental and bodily depression. After a time his breathing became very much oppressed, and he was unable to ascend the stairs. His feet were swelled, and his appetite failed him. On examination I discovered that his liver was much enlarged and hard, and could be felt three inches below his ribs. On the reduction of this enlargement which took place gradually, his breathing became natural, the swelling of his feet disappeared, his appetite was restored, and he has had no return of his symptoms up to this time.

Elderly persons are very much more prone to suffer from enlargement of the liver than is commonly suspected; their altered habits being conducive to it. If, however, we are anxious to prolong life and to render it agreeable, we must not rest content with the simple reduction of the organ to its normal size, but we must endeavour to retain it in that condition. We cannot in the large majority of elderly persons do this by the natural means of exercise, but must fall back upon the judicious administration of medicines which impart tone to the stomach and heart, and must keep a watchful eye upon the hepatic functions. We should

not consider too much the *age* of the patient, but should rather attend to the defects we are called on to remedy.

The late Dr. John Armstrong in his lectures when referring to age remarks, "Cicero says that age commences in the Cradle and terminates only in the Grave; and I am convinced that the mind of man might, like the sun, grow larger at its setting, and shed a beautiful light at the period of its decline. I know a remarkable instance of this in a man, the whole labour of whose life was to do good to his fellow creatures—the celebrated Jeremy Bentham. Lewis Cornaro was another example of the efficacy of controlling the animal appetites, in prolonging life and the mental powers."

Dr. Armstrong concludes his observation on Longevity by saying, "The skin of old persons should be kept warm; the bowels moderately open; the liver should be occasionally roused by an alterative, and very gentle exercise should be taken. The exercise should be moderate, because the body of an old man resembles an old ship, which, if exposed to a storm, will almost invariably founder, but which if kept in smooth water will last a very long time."

These observations were made before the time of Flourens who, as I have already stated, has endeavoured to establish certain laws, by which we may be guided in forming an estimate of the probable duration of life.

The celebrated raven of the late Charles Dickens had been taught to give utterance to a sentiment which, when put into practice, is highly conducive to longevity, viz., "Never say die." If I remember correctly this was followed by an imitation of the drawing of innumerable corks, which looked very much as if the bird intended to cast a slur upon his own wise advice; for this drawing of corks cannot be considered otherwise than as antagonistic to longevity. The bird's aphorism, however, is doubtless most valuable in its application to the aged, to induce them to make light of the ailments which they feel, and not to attach undue weight to them. The more cheerfully declining years are borne, the happier it is for the bearers, and the more delightful to witness by those around them.

A medical friend of mine told me that he was in attendance upon a very cheerful old gentleman of 80, and on paying him a visit one day, he found him reading the Psalms. "Do you know Mr. P.," he observed, "that I think the inspired Psalmist made a mistake when he put the age of man at threescore years and ten, it should have been fourscore and ten."

It may be desirable to refer to the diseases which are more immediately the cause of death in the aged, and the chief of these are traceable to congestion of one or other of the vital organs. Such congestion; when in the brain, produces apoplexy, in the lungs and air-passages, bronchitis; in the liver, imperfect or impaired action; and, in the kidneys, a cessation of their natural function. All these results may be originally produced by a defect in the heart's action, whether occasioned by an external influence, such as cold, causing a chill, or by a shock to the nervous system, whether mental or physical, causing depression.

I am afraid it is too much our custom, when called upon to prescribe for the ailments of elderly persons, to regard the mere element of age too seriously; and to attribute many symptoms and discomforts to this alone; overlooking the fact that similiar symptoms are frequently met with in the meridian of life; and that, when they occur in the aged, they may be treated, in the majority of cases, with a fair amount of success.

It is not less true that, in young persons, the discomforts which would excite grave attention in the aged, are often treated with unwarrantable neglect. Youths who are growing fast will frequently complain of loss of strength, flying pains, shortness of breath, etc. These symptoms are often looked upon as if they were of little consequence, and are attributed—justly enough—to the excess of rapid growth. They are, however, none the less worthy of the attention which they do not invariably receive.

It is as necessary to contribute strength to the growing youth, by the aid of generous diet and tonic medicines, as to attend to the defects observable in the more mature fabric of the aged, when their bodies require

repair, and to subject them to proper hygienic and medical treatment.

Many of the infirmities of age may be traced to the gradually increasing disinclination of the individual to make use of his muscles of locomotion. Many persons, merely because they have become old, deem it necessary to relinquish active exercise, and thus allow their joints to become like rusty hinges, and their muscles, tendons, and ligaments to become flabby and relaxed.

It is not often that we are able, by reasoning with such persons, to induce them to change their mode of life, and to give their limbs a fair amount of exercise; and it is also hard to persuade them of the increased amount of health and comfort they may obtain by such a course; they prefer ease and rest, with all the bodily discomforts consequent upon their indulgence in them, to the temporary unpleasantness of taking exercise to keep their bodies in perfect health.

Now and then, however, we may meet with an individual who has strength of mind sufficient to shake off the habits of indolence that are so common as we advance in life; and of this the case of the lady, already mentioned on p. 359, may be cited as a remarkable example.

As in the instance of the Serjeant-at-Law, mentioned on p. 362, the simple fact of having attained the age of 70 years frequently induces men to act as if their days were at an end, and as if their activity and enjoyment of life must cease in consequence. If no one will take the pains to disabuse the mind of such an idea it is easily understood how imperceptibly the individual may fall more and more under its influence. In such circumstances, if the proper moment for advice is chosen, a word in due season will frequently produce a most beneficial result.

Notwithstanding the value of mental and bodily exercises in conducing to healthy longevity, it must be acknowledged, that many persons pass their declining years in the enjoyment of a fair amount of health who do not practice the latter of these essentials. Such persons are moderate in their appetites, are usually of

equable temper, and free from disease, and their span of existence does not seem to be shortened by their abandonment of active habits.

This, however, is not the case with the majority of mankind. In far too many instances, when men have obtained a competence which it has been the object of their lives to acquire, they seem to think that the necessity for exercise no longer exists, and they often relinquish, too suddenly, those active pursuits which have been the means of maintaining their health and of contributing to their success in life.

It then seldom occurs to them that it is necessary to make a corresponding change in their mode of living when the period of their activity has ceased. They will eat and drink just the same as they did when in pursuit of their occupation. The natural consequence is to establish plethora, which is likely to increase, and which may terminate in disease, so that a comparative early death may be the result.

The greater frequency in the present day of sudden death from previously unsuspected heart disease, from apoplexy, and from paralysis, points significantly to the existence of some undermining process which can only be explained as arising from long-continued vascular derangement, ending in mechanical change of structure or in the sudden collapse of some vital organ, such as the heart or brain.

The ailments which specially affect the aged are those which are common to the majority of persons who lead a sedentary life. They are, lost or diminished appetite, imperfect digestion of the food, and all the consequences resulting from its mal-assimilation. It will, as a rule, be found that derangement of the hepatic function is the most prominent symptom; although no pain or discomfort may be complained of in the liver, the patient being perhaps unconscious that he possesses such an organ.

The liver is next in importance to the lungs in relieving the blood of an excess of carbon, a function to which exercise so greatly contributes, but its main office is to act as the purifier of the lower portion of

the body, and its contained abdominal viscera, by the regular discharge of the peculiar secretion—bile—which is nature's aperient.

When this secretion becomes impaired in quality, or is deficient in quantity, sickness or continued constipation is a common result. The restoration of a healthy secretion removes these discomforts.

The medicines most effectual for producing this result are alteratives, and one of the most valuable of them, when administered in small doses, is mercury.

In the present day, however, there is a strong prejudice existing in the minds of many medical men against the employment of mercury in any one of its various forms. These men have been debarred from acquiring the knowledge of the value of this medicine when properly and judiciously administered, by the wholesale condemnation of it in which some of our most eloquent medical lecturers and writers have indulged. I cannot give a stronger illustration of this than by referring to the very able treatise of the late Dr. Brinton, on Diseases of the Stomach. He seems, in this otherwise excellent work, to ignore altogether the influence exercised by the liver—the largest organ and gland in the body—in contributing to the production of some of the diseases of which he treats, and indeed he only refers to the liver in order to introduce a strong oburgation against the employment of mercury in any of its forms. Yet this talented physician died at an early age from an affection of the liver, of which experience has shown us he might have been cured by the use of this very remedy, if he had ventured to employ it.

There can be no doubt that the prejudice against mercury, as against bleeding, arose, and very properly so, on account of the indiscriminate employment of these two powerful agents in the treatment of disease. It is not too much to assert that, in consequence of the former indiscriminate use of these remedies, many lives have since been sacrificed which might have been saved by employing with judgment one or other of them for the cure or prevention of disease. In the hands of

those who *know* how to employ mercury, there is no more valuable or more safe remedy; but, like all other powerful agents, it requires to be given with caution. We possess no other medicine which will accomplish the same objects, or which is so completely under control. Podophyllin, which has been recommended as a substitute, often produces more discomfort than I have ever seen mercury occasion. I wish to record my experience of the great value of mercury, when used as a remedy for removing torpor of the bowels, and the sluggishness that exists in the system generally, in old persons. I can speak with confidence of the comfort it affords to the aged when prescribed in minute doses, which answer the purpose of larger doses of more active medicines, without producing the distress and exhaustion which sometimes follow from the over-action of the latter.

It will be found, even at the most advanced period of life—and I can refer to individuals whose ages range from 80 to 97—that they may enjoy better health than could otherwise be expected, by taking occasionally a small dose of blue pill, such as two grains, with an equal quantity of the compound extract of colocynth, or of the compound rhubarb pill. In some cases, where there is a tendency to congestion in any particular organ as the heart, lungs, or brain, a single grain of Calomel with two or three of the extract of Hyoscyamus may be given once a week or once a fortnight, to be carried off on the following morning, by some mild laxative; as a teaspoonful of castor oil or lenitive electuary, or a dram or less of the compound powder of liquorice.

Equal parts, say four grains each, of the compound rhubarb pill and the compound galbanum pill will be found a very useful occasional laxative for acting on the bowels and relieving the intestines of flatus, when an alterative is not required. This pill also acts as a moderate diuretic.

Medicines of this kind in conjunction with tonics, such as decoction of bark and ammonia; or, when acids are required, quinine with the dilute aromatic sulphuric acid, will do all that art can accomplish in

rendering the declining years of life easy to bear; and will remove or prevent many of those minor ills to which the body is subject in old age, and which are sometimes harder to bear than troubles of a graver kind.

It is not uncommon to meet with instances, in men more particularly, of contraction of one or more of the fingers. I have seen several such cases, the little finger and the adjoining one being most frequently affected, or sometimes the long finger of either hand. It is remarkable that, although the gouty diathesis has existed in some of these cases, attacks of gout have been rare—the contraction being quite independent of the deposit of tophi, which is known to produce such great distortion of the fingers in those afflicted with gouty paroxysms. The process of contraction is usually slow; and, the tendons not being painful, or, at least, the pain being very slight, the individual pays but little attention to the gradual drawing in of the finger. Before the contraction becomes permanent, on bending the fingers, the joints fail to answer quickly, but will at last yield with a “click.”

If early attention is paid to the employment of extension and friction, contraction of the fingers may be prevented; but it requires assiduous attention and watchfulness to prevent the occurrence of this change, when any tendency to an unnatural stiffness is observed.

In conclusion I may be permitted to observe that the errors by which health is sacrificed, whether in youth or in old age, are almost entirely the results of an ignorance which it should be the business of those who are concerned in the work of education to prevent. It is not enough to rest content with teaching youths how to read and write; something more is required to be instilled into them. I do not refer to theological teaching, which is acknowledged by all unprejudiced persons to be the very basis of morality, but to an insight into the laws which govern health, so as to enable them to ward off the diseases which tend to shorten life. Agesilaus being asked what he thought most proper for boys to learn, answered, “What they ought to do when they become men.” Let those who

are most conversant with the various systems of education among high and low throughout the kingdom, say whether the advice of the sage is attended to in this most important particular in our advanced age of civilization? The record of the experience of one person must be taken for what it is presumed to be worth, but such has been mine that I can assert that some of the most promising youths I have known have been shipwrecked in their outset in life—as well as men afterwards—from sheer and entire ignorance of the laws which govern health. This is not an occasion for entering into the details of these special cases, but I cannot omit to mention the observation of an intelligent Eton boy, who, when informed of the probable ultimate consequence of an infraction of a natural law, exclaimed, “Oh! how I wish we had had some one at Eton to have instructed us in these subjects.” It is not asking too much of our legislators, who have taken so deep an interest in the education of the rising generation, nor of those to whom the instruction of our children is intrusted, that they will render such education as complete as possible, by providing instruction in *physiology* as an essential portion of it.

It is, perhaps, too much to expect that chairs of physiology will be established for the fulfilment of so desirable a purpose, but the difficulty might be surmounted by requiring pupil teachers to make themselves masters of the elements of physiology, and by allowing them to relinquish some really less important subjects in which they are now examined previous to their appointments. If even extra payment were required, it would be money well laid out, and the rate-payers, on whom the burden of eleemosynary education falls, would never grudge so useful, and ultimately profitable, an expenditure. In regard to those to whom is intrusted the education of our sons and daughters, it should be made incumbent on them to provide proper physiological instruction for their pupils. The subject when properly treated is by no means abstruse, and there is a fascination in it which would prove a source of great interest to the old as well as to the young.

CHAPTER XII.

ON SLEEP.

THE connection between liability to gout and imperfect sleeping is not at first sight evident; but the experience of many years has convinced me that it is none the less real and certain. The complete significance of sleep is perhaps yet hardly known to physiologists; but all are agreed in the view long since arrived at by the poet on the ground of experience; namely, that it is "tired nature's sweet restorer." Perhaps the fact most conclusively known about sleep is that it is a period when the brain proper, the centre of observation and of intelligence, is to a great extent deprived of blood; and the vital fluid which is for the time diverted from the organ of the mind may reasonably be supposed to be ministering to increased activity elsewhere, so as to explain what is undoubtedly the fact, that sleep is the time of reparation for the bodily organs generally, and that it furnishes the opportunity for them to be restored to fitness for activity. If this be so, and all experience confirms the belief, it can be no matter for surprise that imperfect sleep should lead to the imperfect performance of function; and this again to the development of any morbid tendency which may exist in the individual. The whole tendency of the argument of the foregoing pages has been to connect gout with the imperfect depuration of the blood, or, in other words, with defective action of the liver and of the kidneys; and it is just the period of sleep in which the duties of these great glands should be most completely performed, and in which the blood should be most

completely relieved of those various waste products which, by their accumulation within the system, furnish the starting point of gout as well as of various other maladies.

The natural history of sleep, if I may use such an expression, is at once curious and varied. It was probably the least sagacious of the "four Georges" to whom tradition assigns the first enunciation of the dictum which has ever since been a favourite among stupid early risers, to the effect that six hours of sleep are required by a man, seven by a woman, and eight by a fool. Extended experience shows the impossibility of laying down a rule, even approximately; so much do individuals appear to differ in their requirements; but it may safely be said that, although many persons can work with but little sleep over periods of intense or concentrated activity, yet these, as a rule, are compelled to make good the arrears owing to their systems as soon as opportunity is afforded them. One of the most remarkable instances of sustained activity upon little sleep was afforded by the late Lord Chancellor Truro; who, when in full work, was accustomed to retire at three in the morning and to rise again at six, insomuch that he required relays of private secretaries to receive his instructions. Lord Brougham is said on one occasion to have worked continuously, and without sleep, for a week, but it is probable that, during this time, he would at least obtain snatches of very profound repose; and it is admitted that, when the occasion of his wakefulness was over, he slept not only soundly but also long. M. de Lesseps is said by his friends to have a "running account with sleep;" being able to sleep for twenty-four hours or more at a stretch, and then to pass six or seven nights without sleeping at all. At sea he is able to remain stretched on his berth, sleeping all the way except at meal times; and his greatest recorded feat of this kind was to sleep for 107 hours, between Marseilles and Alexandria, out of the 130 hours for which the voyage lasted. The first Napoleon, and the first Duke of Wellington, are said to have exercised a similar power of sleeping at will; and traditions of like kind have

been preserved with regard to many other great men who have been called upon for extraordinary periods of mental activity, and who, no doubt, have instinctively acquired the knack of taking much needed rest whenever they could obtain it. It has often been observed that the rest so taken is not liable to be disturbed by any sound or commotion foreign to the dominant idea of the sleeper, but that it is instantly broken by anything connected with this idea. Thus, Dr. Carpenter relates the case of a naval officer, who was one of the officers of the watch in a Channel frigate during the war with France in the beginning of the century. When relieved from duty he fell instantly into a profound slumber, which was not broken even by the firing of the deck guns above his head; but, if anyone whispered in his ear, "a sail in sight," he sprang to his feet in full wakefulness and activity. The dependence upon chance rest must always, however, be regarded as a somewhat risky proceeding, which entails danger of breaking down at a critical moment; and this seems to have been the opinion of Lord Palmerston, who never permitted his duties as Prime Minister to interfere with the amount of repose which he felt to be necessary to his continued well-being. He would remain in the House of Commons until the conclusion of the longest debate; but, when he once reached his bedroom, his servants had strict orders that he was on no account to be disturbed until after the lapse of eight hours. By that time he had slept sufficiently for the needs of his system, and was ready to assume once more the responsibilities and cares of government.

It is much to be wished that many others had been equally careful with Lord Palmerston in this matter; for there can be no doubt that many fine minds have been weakened, and many lives destroyed, by the endeavour to dispense with a portion of the sleep which was essential to the complete repair of the organism. Among the many instances which occur to me I would mention that of the late Dr. Burnet, Professor of Botany at King's College, and the last male descendant of the Bishop. He was actively employed during the day in

the work of medical practice; and for several months he sat up during most of the night, engaged in the composition of his work on Botany. His health gradually gave way; and he died, as it was said, of consumption, but really of the effects of insomnia, while still in the prime of life.

A similar fate has often befallen young men of weakly constitution, who have been eager to distinguish themselves at their Universities, and who, with this aim in view, have continued their studies long after they ought to have been in bed; in many instances still further injuring themselves, both as regards digestion and nervous force, by drinking strong tea or coffee to keep themselves awake. Those of exceptionally strong constitution may pass through such an ordeal apparently if not really unhurt; and their example serves to stimulate imitation on the part of others who are not similarly endowed. In the latter instances the intellectual capacity is not adequately sustained by physical power, and the latter gives way in the struggle.

There seems to be a very general consent, on the part of those who have brought the matter to the test of experience, that the best time for mental labour and application is in the early hours of the morning. The testimony must perhaps be taken with a grain of salt, if we recollect the humorous description of the effects of early rising, once given by a literary man who was little addicted to practising it, to the effect that it made its followers conceited all the morning, and sleepy all the afternoon. With all due allowance for different opinions and for different experiences, the preponderance of evidence is certainly in favour of the morning hours, when circumstances permit them to be utilized; but it must be remembered that some time is required before any one who has been for a long time habituated to late hours, will become equally habituated, to early ones, and able to pick up the threads of his work with the same facility in the morning as in the evening. This difficulty once overcome, the best method of working is probably to retire

to bed at ten o'clock, or certainly not later than eleven, and to rise at five. There will then be time for three hours of close application before breakfast; and the results of these three hours, certainly in some people if not in all, may be taken to be equal to those of double the time at any other period of the day. The freedom from interruption which is secured by early rising is of itself no small advantage of the practice, even if we must admit that it is to some extent balanced by related inconveniences, such as that the early riser may have to light his own fire, prepare his own coffee, and so forth. These inconveniences, nevertheless, are but minor ones, and may be reduced to a minimum by gas fires and by the many other ingenious contrivances of the present day. I have known many men who have practised the method set forth, and who have derived great advantage from it in every respect.

When all has been said about the necessity of sufficient sleep, it must still be remembered that there is another side to the question, and a possibility of sleeping too much. In regard to sleep, as in regard to all other matters, the safest practice, and the most excellent discipline, are to be found in moderation. Dr. Carpenter long ago pointed out that, while those who slept inadequately were seldom capable of very fruitful mental effort, those who slept to excess often seemed as if they were never thoroughly wide awake. Charles Dickens is believed to have derived the characters of his various fictions from observation rather than from invention; and, if this be so, the fat boy in *Pickwick* would certainly afford a good example of the soundness of Dr. Carpenter's view. Common experience tells us that, when we wake in the morning after sound repose, even though it be not the usual hour for rising, the period of useful sleep for that night is over. If we compose ourselves again, and woo sleep, it may come; but it will at the best be of poor quality, generally disturbed by fantastic dreams, and will leave us less refreshed, and less fit for the business of life, than we felt on first awakening. The lesson taught by this experience is that a morning on which we wake

unusually early should in some way be turned to good account; and no one who is actively engaged in the world can ever be at any loss for opportunities of so employing it.

It is not, however, always possible to utilize the morning hours in the manner described; for much mental work is of necessity nocturnal. The leading articles in the daily papers, for example, are, as a rule, written at night; and the writers, who, from want of material, often cannot commence until ten o'clock or even later, may be compelled by the exigencies of proof revision to remain on duty until perhaps two in the morning. I knew a gentleman some years ago who had occupied one of the most prominent positions in an important colony; and who, on returning to England, became engaged in a dispute with the then Lord Stanley. My friend was a man of average physique, and had usually preserved good health. After being a year in England he became ill, and complained of want of sleep and of great pain at the back of his head. He had the best attainable advice, but at the end of a month he died. It was not until after his decease that I became aware that for three months he had written, every other day, a leader in the *Times*. I saw him professionally on two occasions, and, partly from the seat of the pain, formed the opinion that he was suffering from intense nervous exhaustion. At that time, nothing was known with regard to the manner in which this exhaustion had been produced; but the ultimate revelation explained the whole.

It is worth mentioning, as a means of overcoming the difficulties sometimes attendant upon compulsory nocturnal labour, that it may usually be undertaken with impunity, even after a busy day, if a sound sleep be taken after dinner, and before the nocturnal work begins. A gentleman who was engaged in medical practice during the day, and who was often required to write for a daily paper at night, succeeded in accomplishing both his tasks by the adoption of the following method. His hospital and other work being done, he dined at half past six. As soon as he rose from table he

removed his coat, loosened all tight articles of dress, and laid himself down upon a bed, warmly covered. In five minutes he was asleep, and slept quite soundly until he was called at nine, when he took a cup of good tea, and proceeded to his destination. By the time he arrived there all vestiges of sleepiness had disappeared, and he was able to get through his work with credit and satisfaction. Returning home about two in the morning, he rose again at eight for the business of the day; and in this manner he succeeded in obtaining eight hours of sleep in the twenty-four, while carrying on, at the same time, the work of what might be called two distinct professions.

While the active employment of the mind in intellectual exercise is, generally speaking, almost as conducive to sound sleep, and as certain to be followed by it, as the active employment of the body in sport or labour, there are yet many exceptions to the former rule.

An essential prelude of sleep is a diminished circulation of blood in the vessels of the brain; and it sometimes happens that persons whose brains have been active, especially to a late hour of the night, cannot speedily dismiss the greater blood-supply, which is at once the cause and the condition of activity. This is especially prone to happen when the work has been sedentary, such as that of writing or studying, and when the stillness of the body, and the activity of the brain, have combined to produce a languid circulation, and a consequent coldness, of the feet and of the lower extremities generally. The student who is thus circumstanced may retire to bed, but seldom to sleep, and he may be restless and wakeful for a large portion of the time which he ought to devote to slumber. Such a condition as this requires immediate attention, because experience leaves no room for doubt that time saved from sleep is infallibly destructive to mind, body and estate. The best remedy for wakefulness consecutive to mental exertion is to be found in active exercise; and a well-known member of Parliament, who suffered from this form of insomnia, cured himself by the expedient of travelling up and down the Thames Embankment on a bicycle, as hard as he could go, for two or three hours before he retired to rest. The

addiction of the Prime Minister for the violent muscular exercise involved in tree-felling is no doubt connected with an instinctive desire for muscular effort, as a corrective of the effects of mental excitement and exertion. Lord Palmerston, when he was Premier, was much addicted to cutting and lopping timber on his estate in Hampshire; and leading statesmen and lawyers are accustomed, as a rule, to devote their periods of repose from official or professional toil to field sports of the most fatiguing description. It will not always suffice, however, to wait for the needful exercise until the arrival of a time which can be devoted to recreation; and a student who is wakeful at bedtime should close his books half an hour before his accustomed period, and should devote the time thus gained to a rapid walk or run, by which his thoughts will be diverted from his occupation, and the circulation of his lower extremities rendered active. By the judicious employment of this method, he will return home ready to take the rest which he so much requires, and may expect to sink speedily into refreshing and dreamless slumber.

We shall gain a good insight into the causes of some forms of want of sleep if we consider attentively the conditions of living men who are actively employed during the day in field sports, such as hunting, shooting, or fishing, and with whom a bad night is an exceptional event. The physiological explanation of their immunity from sleeplessness is easily intelligible. The two most important organs of the body, the brain and heart, on the proper action of which healthy sleep is chiefly dependent, are agreeably occupied in following the indicated pursuits. The heart stimulates the brain by the increased amount of blood which it transmits to the latter organ under the influence of physical exertion; and, if the sport be good, fatigue will be the last thing thought of. When in time fatigue is felt, the pleasant languor which succeeds to it, when rest is taken, is only known to those who have experienced it. The heart and brain soon return to their normal tranquillity of action, and, as a result of the stress under which they

have been working, demand repose. This speedily leads on to sleep, the sleep of all others which is most refreshing and most agreeable.

The daily vocations of men who dwell in cities are seldom such as to permit more than an occasional indulgence in the pleasures which are certain to procure sleep; and they should therefore regard it as a duty to take at least a moderate degree of daily exercise with perfect regularity. For this purpose, walking is perhaps the most beneficial exercise which can be employed; since it needs no preparation, costs no money, and brings into use all the muscles of the body. To walk for the sake of exercise alone, and without some so-called "definite object," is by many considered irksome; but those who thus regard it might learn a useful lesson from the experience of persons who would walk if they could, but cannot. Of the value of the exercise there can be no question. A well-known professional friend of mine maintained the most robust health, long after he had reached his 80th year, by taking walking exercise every day for an hour. This he did "sharp," as he described it; for he considered that to walk quickly doubled the advantage of the practice.

The next best exercise, for those who can afford it, is riding; and it has the advantage that it may be continued to a period of life later than that at which men will usually walk for the sake of health. A horse is to no small extent a companion; and hence the habit of riding is not felt to be monotonous. Many old people have continued to ride to a very advanced age; as for example the first Duke of Wellington, who rode even when his limbs were scarcely able to grasp the saddle. A well-known Solicitor rode almost daily until he was 88, and was very angry with his country doctor, who tried to dissuade him from continuing the practice when he was no longer secure in his seat. He ultimately yielded to the doctor's persuasion; but, although he lived to be 91, he declared to the last that his life had been shortened by the abandonment of his favourite exercise.

Whatever may be the value of exercise, men who have reached a certain period of life should be careful to confine themselves to those forms of it which do not

involve any great or sudden strain on the muscles. Games like Rackets, Tennis, or Lawn-Tennis, may in moderation be conducive to health and to sound sleep, but they soon become hurtful if carried to excess by persons beyond the middle period of life. Moreover, if such games are abandoned suddenly, the whole system will be more or less enfeebled by the consequent change in the condition and activity of the muscles. The wise course is to diminish all forms of exercise, whether games, walking, or riding, not suddenly, but cautiously and by degrees.

In Mr. Forster's admirable life of Charles Dickens, he gives an account of the methods by which the great author endeavoured to procure sleep. From excessive stimulation of his brain, he was constantly compelled to take exercise before sleep could be obtained. Mr. Forster quotes the following passage from one of Dickens' letters. "My last special feat was turning out of bed at two, after a hard day, pedestrian and otherwise, and walking thirty miles into the country to breakfast." This walk was taken on the 15th of October, 1857. There is much other evidence in the biography that Dickens depended for many years upon excessive exercise to overcome the brain excitement which so often deprived him of sleep. He never seems to have thought of the consequences which his habits in this respect must ultimately entail, nor of what would happen when the exercise was compulsorily abandoned. He was continually "burning the candle at both ends," and the practice, in his case as in so many others, was the direct cause of premature death.

Mr. Forster informs us, in his third volume, that when Dickens had reached his 52nd year he began to complain of feeling very unwell, and at the end of February, 1866, he wrote thus: "I have been very unwell. F.B. (i.e. the late Mr. Carr Beard) wrote me word that with such a pulse as I described, an examination of the heart was absolutely necessary. "Want of muscular power of the heart," B. said. "Only remarkable irritability of the heart," said Dr. Brinton of Brook Street, who had been called in consultation. I was not disconcerted, for I knew well beforehand that the effect

could not possibly be without one cause at the bottom of it, of some degeneration of some function of the heart. Of course, I am not so foolish as to suppose that all my work can have been achieved without some penalty, and I have noticed for some time a decided change in my buoyancy and hopefulness, in other words, in my usual "tone." But tonics have brought me round." On the 22nd of September, he wrote, "I think there is some strange influence in the atmosphere. Twice last week I was seized in a most distressing manner, apparently in the heart; but Jack persuaded me only in the nervous system."

Mr. Forster was a true friend to Dickens, and tried hard to dissuade him from overtaxing his strength, but all warnings were unheeded. Dickens wrote, in August, 1867, "I am laid up with another attack of my foot, and was on the sofa all last night in torture. I cannot bear to have the fomentations taken off for a moment. I was so ill with it on Sunday, and it looked so fierce, that I came up to Henry Thompson. He has gone into the case heartily, and says there is no doubt the complaint originates in the action of the shoe, in walking, on an enlargement in the nature of a bunion. I could not walk a quarter of a mile to-night for £500. I make out so many reasons against supposing it to be gouty that I do not really think it is." There can be but little doubt, from this description, that it was in reality gout from which he suffered. In writing to his daughter from Liverpool, after one of the most wonderful ovations he ever received after reading, he says: "Three thousand people were turned away from the Hall last night. Except that I cannot sleep, I really think myself in very much better training than I had anticipated. A dozen oysters and a little champagne between the parts every night seem to constitute the best restorative I have ever yet tried."

Of Dickens's last visit to America in 1868, Mr. Forster records that, "during his terrible travel to Albany his cough had spared him, but the old illness had broken out in his foot; and, though he persisted in ascribing it to the former supposed origin (having been lately again wet from walking in melted snow, which I suppose to be the occasion of its swelling in the old way,) it troubled

him sorely, extending now at intervals to the right foot also, and lamed him all the time he remained in the States." This extract fairly proves that the "illness of his foot" was gouty; for on this occasion there is no mention made of his having a bunion on his right foot, by which to account for the lameness which affected it also. Long before Dickens complained of illness, his great trouble in life was want of sleep; and his method of obtaining it, by exhausting the power of his heart by excessive walking, told upon him ultimately with fatal effect. The last time Mr. Forster saw him was on the 22nd of May, 1870. He had just heard of the death of Mark Lemon, which led his thoughts to the crowd of friendly companions in letters and art, who had fallen from the ranks since they played Ben Jonson together. "And none beyond his sixtieth year," he said. "Very few over fifty." Mr. Dickens died on the 9th of June following, and was only in his 58th year. His history teaches that exercise may be too violent; and that, when the brain is overworked, other remedies must be had recourse to.

While sleep flies from some brain workers, it is apt to visit others with inconvenient pertinacity, and to refuse to be repelled. The periods most favourable to its onslaught are those at which we desire to combine mental attention with bodily inactivity. A warm afternoon, a well-filled public building, with its necessarily somewhat carbonised atmosphere, and a profound sermon delivered in a soothing voice, form a combination of conditions by which sleep is almost invited. The man who struggles against it is a curious and interesting spectacle. He begins by an endeavour to look as if he were preternaturally wide awake; he raises his head and opens his eyes as wide as he can, generally making some little manifest movement, such as altering in some way his position, so that all in his neighbourhood may see that he is not sleeping. Such muscular efforts last but a short time. The eyes gradually close, and are opened again in a spasmodic fashion from time to time. At length, the head descends slowly towards the chest, and voluntary muscular effort is over for the time. If the hands hold a book or a

paper, the grasp of it gradually relaxes, and it is suffered to fall to the floor. The world, with its cares and its surroundings, is shut out from the mind, and the sleeper is wrapped in complete forgetfulness.

It is not only the public place which may be the scene of such slumber, but the domestic fireside as well; and nothing is more remarkable than the degree and extent to which the tired mind or the tired body will sometimes be refreshed by a sleep of this kind, even if it be only of very short duration. I remember a very hard worked country Doctor, who dined early, and was accustomed to come home to tea about six o'clock. He would take an easy chair by the fire, and be asleep almost as soon as he descended into it. His wife would pour out his tea, and would wake him as soon as it was sufficiently cool to be drunk with comfort. He would rouse himself for a moment, swallow it, and be asleep again as soon as the cup was taken out of his hand. The second nap would presently be interrupted in a similar manner; and then he would awake fresh and lively, and be ready to continue the considerable amount of work which often remained for him to do. The complete invigoration which a short sleep will sometimes afford furnishes a curious physiological problem, for which the ordinary notions about the subject can hardly be said to furnish any adequate explanation.

In persons who lead even moderately wholesome lives, the habitual want of sleep must always depend upon some state of bodily disorder, the discovery and removal of which will form the first step in the direction of cure. Even if there be no organic cause originally operating, the want of sleep will of itself produce much mischief. It interferes with the healthful process of digestion; so that the food, even if it be but small in quantity (the appetite being generally capricious), is not so digested as to supply a healthy description of blood. When the fluid thus vitiated reaches the liver, it fails to supply that organ with materials for the secretion of healthy bile, and hence the whole of the abdominal functions become deranged; the brain, in such cases, always sympathising actively. Perhaps the

most common origin of sleeplessness is the continuance of that activity of the heart and brain which are conditions necessary to intellectual labour, and which fail when such labour is relinquished at the appropriate time, to subside in the accustomed manner. This will most frequently happen when the occupation of the mind has been of the nature of worry or anxiety, and when the anxious man is still tormented, after he has retired to rest, by the cares which have pursued him during the day. A habit may be formed in this way which may last after the occasion of trouble has passed, and may attach itself, in greater or less degree, to mental occupations of a less emotional character.

In order that the activity of the circulation in the brain may subside with the subsidence of the demand on its activity, it is before all things necessary that there should be no impediment to the easy and natural flow of blood into other channels; and the most essential condition for this purpose is that the great glands of the body, the liver and the kidneys, should be free from congestion and in a state to discharge their respective functions. If the flow of blood through them is impeded, we shall vainly expect it to diminish in the brain; and hence one of the first things to be done, in all cases of sleeplessness, is to ascertain the state of the liver by palpation and by the character of the evacuations, and to examine the urine, especially for bile-pigment and for excess of urea. The least evidence of defective hepatic action would call for the administration, as the beginning of the treatment, of small doses of some mild mercurial, either with a purgative or with bicarbonate of potash neutralised by lemon juice or citric acid. It is only in combination with such means as these, and sometimes not until they have already produced a decided effect, that recourse should be had to sedatives, the most generally useful of which are the Chloral Hydrate and the Bromide of Potassium.

Besides persons who are still in other respects healthy, there are many ailing people who suffer from want of sleep. Invalids, who have been confined for long

periods to their beds or houses, or who from any cause have been precluded from taking active exercise or breathing fresh air, are very frequently sleepless. It is true that sleep may not be of the same degree of importance to such persons as to those who are actively engaged in the turmoil of life, but still it is of high importance, and it is often greatly desired as affording a temporary escape from the distressing sensations which are so commonly incidental to prolonged illness. In such cases, as well as in those of the kind already adverted to, and in which the due attention has been paid to the secreting functions, the question of sedatives will have to be considered, and the physician will frequently find occasion to produce what has been called (somewhat erroneously), artificial sleep. He must then be guided by balancing his knowledge of the evils likely to accrue from want of sleep against those which may arise from its production. In this, as in many other things, mankind have not to choose between the bad and the good; but only between the better and the worse.

When the use of sedatives is clearly indicated, the two medicines already mentioned will usually be found preferable to all others. It may be said of them that they act better in combination than singly; and the chief advantages which they offer are that they do not interfere in any way with the performance of the vital functions, and that they may be discontinued, when no longer required, without any distress to the patient. This, as is well known, is seldom the case with any of the various forms of opium.

I could cite numerous cases as illustrations of the value of the timely use of sedatives; and one of the most conclusive which occurs to me is that of a gentleman 80 years of age, who was suffering from suppressed gout, and who for a long time could obtain but little sleep. He took of Chloral Hydrate and of Bromide of Potassium a scruple each twice every night for more than three months. He took the first dose at 10 p.m., and it made him sleep until about 3 a.m., when he took his second dose, and slept until 8 or 9 o'clock. At the end of the three months, he left off the morning dose, and

continued for a time the nocturnal one, which he shortly diminished to half the original quantity, and abandoned altogether on his complete recovery. This happened four years ago, and the patient never felt the want of his nightly sedative, and has remained in good health from that time to this. In extreme cases, involving cerebral derangement, the chloral and bromide may be continued for indefinite periods, as for one, two, or three years, with manifest good effect in promoting comfort and in prolonging life; but no medical man would sanction such employment of them except from evident necessity.

We occasionally meet with persons who, without being exactly invalids, yet have their lives made burdensome by loss of rest. They are usually of highly nervous temperament, so that events which would appear trivial to many others are very afflicting to them, and they are often described as the victims of morbid sensibility. If they become deranged in health, they are especially prone to lose sleep; and, as they are usually unable to take sedatives, their misery may be indefinitely prolonged unless sleep can be procured for them. They are in a sort of vicious circle, unable to sleep because they are ill, and unable to recover from illness because they cannot sleep. The introduction of chloral hydrate has been a great boon to people of this description; since, if administered with due caution, it usually acts upon them in a satisfactory manner.

For such nervous insomnia, however, an agreeable diversion of the mind is sometimes an efficient remedy. I knew a lady of the class described above, who, prior to the introduction of chloral, fell into a depressed condition of health. Her appetite failed and her strength gave way. She was intolerant of both tonics and sedatives; and, on one occasion, she passed three weeks with hardly any sleep. Being passionately fond of music, she was advised to go to the Opera as a cure for her insomnia. She went, and the mental diversion served completely to break the chain of morbid wakefulness. She slept soundly after the performance, and her nights continued good. Whenever a tendency to want

of sleep now shows itself in this lady, a dose of chloral and bromide, perhaps twice repeated, at once brings her back to her ordinary state.

Many people, and especially those who are not strong, have a tendency to drowsiness after meals; and the question whether this tendency should be indulged or striven against is one which has given rise to much discussion. It is plainly a natural tendency, and as such may be supposed to be a beneficial one. If a dog takes a hearty meal, his next proceeding, assuming that he is at liberty to follow his inclinations, is to turn three times round his tail and then to settle down for a nap. I strongly advise all who feel a similar impulse to yield to it if they are able. There is a popular notion that sleeping after meals is likely to produce apoplexy; but this is entirely without foundation. Apoplexy depends upon the giving way of a blood-vessel within the head; and as, during sleep, the blood-vessels of the brain are less distended than at any other time, the danger is an imaginary one. I have heard of one instance in which a nap in a chair, after a full mid-day meal, produced death in a very remarkable manner. The patient was a robust man of near fifty years of age, and, after having been left to enjoy his accustomed nap in solitude, he was found dead about twenty minutes after its commencement. A post-mortem examination shewed that his stomach had become so enormously distended by flatulence that it had pressed upon the heart and had arrested its action. There can be little doubt that if the patient had been awake he would have felt discomfort from the flatulence, and would have been relieved by eructation, before any mischief had been done; and that his death was really owing to the profound character of his sleep, which rendered him insensible of the distension, and therefore unable to make any effort for its removal. Still, such an occurrence would be one of extreme rarity, and need not operate to influence the conduct of the world in general. A short slumber after meals is usually conducive to complete digestion, more especially in elderly persons. Those who are very strong and

vigorous do not, as a rule, feel any desire to sleep after eating, unless their energies have been overtaxed, so that they are reduced for a time to the level of less robust persons, whose example, in such conditions, they will generally do well to follow.

An objection sometimes raised against sleeping after meals is that the practice is likely to interfere with the sleep obtained during the night. This assertion, if it be true at all, is certainly only true of persons in strong health; and has no application to those who do not fulfil the description. In the comparatively weak, and in the aged, it often happens that the fatigues of the day have reduced them to a point incompatible with the best digestion, and that a short nap after dinner will repair damages in the most effectual way, without in the least degree interfering with the slumbers of the night. In the case of actual invalids, however, it must be remembered that those who are precluded from taking exercise cannot in any circumstances expect to sleep as well as they would do were it not for this disability. They must not accuse an after dinner nap of producing an insomnia which may be otherwise adequately explained.

A recent author on the subject has written an excellent treatise entitled "Sleep, and how to obtain it." I will quote what he says concerning the after dinner nap:

"If there is one thing more delicious than another, in this life, it is a quiet forty winks after dinner. There may be the sleep after a day's shooting or boating, or there may be the drowsy slumber after a drive in the cold frosty air of a winter's day; but as a delicious period of complete repose neither of them can compare with the after dinner nap."

"There is a calm feeling of satisfaction pervading each member of the body, along with a sense of gratified desire. The appetite has been appeased, and the whole body is conscious of gentle repletion. The aldermanic soup, the delicate red mullet, the heath-flavoured grouse, the Francatellian entremet, each is submitting gracefully to the process of digestion. A

feeling of contentment steals slowly over the senses, the outward sounds grow fainter and fainter, the paper drops from the relaxed hands; the world recedes further and further, the head droops backwards, and nothing remains but the deep and regular breathing of the sleeper."

Notwithstanding this graphic description the author mars it all by what follows:

"But, beautiful and peaceful as this practice is, it is far from being judicious or advisable. An after dinner nap is a thing to be avoided; a weak seeking for the pleasant at the expense of the healthful. Indulgence in an after dinner nap is at the expense of a night's rest." In support of this opinion, he continues as follows: "In an ordinary day's life there will be so much mental work, so much bodily or muscular work, and so much rest from both. If, therefore, we take our rest during the day, there will not exist at night that capability or desire of rest calculated to produce a good night's repose. We may take as an analogy the case of a person who is always eating little scraps at all times. When this person sits down to a regular meal he finds he has no desire for food, no appetite. And why? Because he has frittered away the natural craving in the irregular way alluded to, and when a choice dinner is placed before him he cannot eat a morsel. So with the napper. He allows himself to acquire by degrees (for this habit is not a suddenly developed one), the trick of closing his eyes after a meal and dozing off; he perhaps encourages the habit, but at any rate looks upon it with complacency from its very pleasant nature, and so it grows upon him and becomes a part of his daily existence."

With much of this reasoning, as the reader will infer from former pages, I cannot bring myself to agree. It is never desirable to become the slave of a habit, however innocent it may be; and a person who is in the enjoyment of an easy and rapid digestion has no occasion for an after dinner nap, and may very likely sleep less well afterwards if he indulges in it. An entirely empty stomach is a promoter of sleeplessness, and sleep is itself a promoter of digestion. A man whose digestion

is already rapid, and who renders it still more rapid by sleep, will be likely at last to go to bed with his stomach empty, and to be restless in consequence. On the other hand, when the digestion is slow and weak, the after dinner nap assists without unduly accelerating it, and affords present comfort and advantage without any unpleasant subsequent results.

The influence of an unoccupied and empty stomach in preventing sleep is in many cases very remarkable, and needs to be carefully considered in the treatment, of every form of insomnia. I will quote a typical example of its operation.

A gentleman aged 52 consulted me on account of inability to sleep. He assured me that he had not had a good night's rest for four years, that he usually spent half his nights in walking up and down his bedroom, and that only when exhausted by this exercise could he return to his bed with any prospect of obtaining a few hours sleep. He had resorted to various remedies without any relief.

The patient was a healthy looking and well nourished man, five feet ten inches in height, and weighing between thirteen and fourteen stone. The most careful examination revealed no trace of any organic disease; and his only complaint, besides sleeplessness, was that he suffered pain at night from flatulence. His habits were strictly temperate, and his account of his mode of living was that he made a good breakfast between eight and nine o'clock. He dined at one o'clock, taking two glasses of sherry with his dinner. At six o'clock he had a cup of tea with some bread and butter. At eight a glass of sherry and water and a biscuit; and at ten he went to bed. On hearing this, I told him that medicine would be useless, but that he might speedily cure himself by altering his mode of living. I directed him to diminish the amount of his dinner, calling it luncheon, and to take a proper dinner at 6.30 p.m. He was to carry out this plan for a fortnight; and then, as he lived in the country, to write me word of the result. At the end of the specified time, I received from him a most grateful letter, in which he said, "that he had had

uninterrupted good nights during the whole period, excepting on one night, when he was, he believed, suffering from having eaten heartily of a rich stewed steak."

The cause of this gentleman's suffering was unquestionably prolonged fasting. His stomach had nothing to do from one o'clock in the day until eight or nine the next morning; and it resented this treatment by pain and flatulence.

In weakly children, especially if growing fast, sleep is sometimes not obtained until a late hour. We sometimes find that one child only out of a family will be a bad sleeper; although all may be dieted and treated in the same manner. Even when this is so, and when only one child suffers, it will generally be found that a more generous diet will prove an effectual remedy.

An intelligent girl twelve years old, had for a long time been unable to fall asleep until many hours after she went to bed. She had of late been growing fast, had become very thin, and, although formerly very active, was listless and indisposed for exertion. She had taken tonics for some time without any good effect. She shared the usual meals of childhood with her brothers and sisters, and had some bread and butter and milk before going to bed. I advised this to be discontinued, and to be replaced by a breakfast-cup full of good soup, with some dry toast in it, to be taken the last thing. This additional nourishment had the desired effect. She fell asleep almost immediately after it, and remained asleep all night.

In certain cases, even in children, there can be little doubt that the proximate or remote cause of want of sleep is mainly due to alterations which take place in the blood itself, in consequence of imperfect digestion, of faulty assimilation of food, of over-work of the brain, or of one or more of the numerous "ills that flesh is heir to," such as grief, anxiety, &c. &c., which tend to impoverish the vital fluid on which mental and bodily health are so dependent. Pallor of countenance is a chief indication of this morbid condition; and manifest anæmia, when combined with insomnia, must always be taken into account in the determination of treatment.

In corroboration of this pathological view I will mention a rather unusual case to which I was called a short time ago. The patient was a little girl of two years old, who was a most precocious child. She had scarcely had what her nurse called a "good night" for a month—her sleep having been confined to a few hours of intermittent rest night after night. This child had been fed by the "bottle," from her birth up to the time when I saw her, and many attempts to induce her to relinquish it in favour of other modes of feeding had ended in failure. The child had lost her flesh, and had become pale and feverish. On examining her the only noticeable external fact was the great protuberance of her stomach—which had the appearance of a bladder placed under the skin. The next most prominent symptom was the enormous quantity of urine she passed every day—entirely free from sugar or albumen. She was under the care of a very intelligent practitioner who had endeavoured to obtain sleep by the cautious administration, of small doses of Chloral Hydrate—Bromide of Potassium—Belladonna, but without effect. It was agreed that the child was no longer to be allowed to take her milk from the bottle—that she was to be fed on strong beef tea, frequently during the day, and to take five minims of the Tincture of sesquichloride of Iron with syrup and water three times a day. After adopting this treatment for two days, natural rest returned. On the third night she was restless, when a grain and a half of Chloral Hydrate was given, and she slept throughout the rest of the night. She subsequently recovered rapidly under the treatment.

Passing on from the various conditions of insomnia which require medicinal or dietetic treatment, there are still other contributory causes to be taken into account; and, in treating those of the graver kind, it is always prudent to see that none of the minor or contributory evils are suffered to continue in operation, and perhaps to interfere with or even to prevent the cure. Among the chief of these must be mentioned badly placed, or badly arranged, bedrooms.

Dr. Kitchener gives some very sensible advice as to the bedrooms and beds most suitable for health and repose. He says: "The bedroom should be in the quietest situation possible, as it were, "the Temple of Silence," and, if possible, not less than 16 feet square. The height of this apartment, in which we pass almost half of our time, is, in modern houses, absurdly abridged, to increase that of the drawing room, which is often not occupied once a week: instead of living in the pleasant part of the house, where they might enjoy light and air, people squeeze their family into a "nice snug parlour," "where Apollo cannot spy."

He does not recommend either curtains or tester to the bed, especially during the summer; and inveighs against chimney boards and window curtains; but recommends, instead of the latter, well made double windows and doors. These he says, exclude both noise and cold in a much greater degree than persons who have not tried them can imagine.

It is not, however, in the power of every one to resort to these expedients; and, in their absence, no valid objection can be urged against the employment of window curtains in cold weather. They are best when made of some woollen material.

Bedrooms should be thoroughly ventilated by leaving both door and window open every day, when wet weather does not forbid, for an hour at least. During this time the bed should remain unmade, the clothes taken off and spread out to air.

The best bed is a well-stuffed and well-curved horse-hair mattress, six inches thick at the head, gradually diminishing to three at the feet; and on this another mattress six inches in thickness. These should be unpicked, and their stuffing exposed to the air, at least once a year. Dr. Kitchener is quite right when he says that "an elastic horsehair mattress is incomparably the most easy and pleasant, as well as the most wholesome bed." Since his time, many contrivances have been introduced to replace the under mattress; and among these the spring palliasses, and the support of woven wire, are perhaps most to be commended.

The position of the bed is by no means a matter of indifference. Some persons have maintained, what perhaps is rather visionary, that a bedstead should always be placed east and west, on the ground that it is injurious to sleep in the line of the currents of magnetism which traverse the earth from north to south. There is probably no evidence in support of the belief that to be either in the line of these currents, or transverse to them, would exercise any appreciable effect ; but there can be no doubt as to the impropriety of the common practice of placing a bedstead near the wall in an angle of the room, so that the sleeper, in one position at least, will have the wall close to his face, and will be compelled constantly to inhale his own recently expired air, driven back or reflected from the wall surface. I have often noticed, when a bed has been in such a position, that the wall near to it has become discoloured by the breath of the sleeper ; and it is manifest that the injurious effects of an arsenical paper (and such are not yet quite obsolete), would be greatly intensified by the arrangement which I condemn. Even without any special noxious agency, the constant return of carbonised air to the lungs would constitute an evil of great magnitude, and one which could not fail to be highly prejudicial either to young or old. It sometimes happens, especially in nurseries which are also used in the day time, that a bed is thrust into a corner as a matter of convenience, and in order to get it out of the way. There can be no objection to this in the day time ; but then the bedstead should run upon easy castors, and should always be moved into the middle of the room at night. Many nurses would perhaps object to the trouble of the removal ; but parents who have the welfare of their children at heart will insist upon its being done.

It is highly important to obtain the happy medium in respect of the weight and the warmth of the bed coverings. If they are in excess, so as to produce perspiration, they are exhausting, and detract from the invigorating character of the sleep, or may even produce restlessness. If they are inadequate, the surface is

chilled, the blood is driven to internal organs, and the first condition of sound sleep is withdrawn. This is, it need hardly be said, by far the worst condition of the two; because, while it is easy to throw off superfluous clothing, it is less so to obtain more during the course of the night. The late Charles Reade, in his novel, "Never too late to mend," shows how carefully he has observed in this respect. "Be cold at night?" he makes one of his characters say, "Not if we know it; why you can't sleep if you are not thoroughly warm;" and in describing the night on which poor Joseph committed suicide, he says, "Such as found three blankets too little, added a dressing gown of flannel, or of print lined with fleecy hosiery, and so made shift." The late Dr. Routh, for so many years Master of Magdalen College, and who died shortly before attaining his hundredth year, is said to have put on an additional blanket to his bed every winter for many of the later years of his life, and never to have had it removed in summer, so that at last he slept under a pile of formidable height. The weight of so much covering would be objectionable and fatiguing to most persons; and the down quilts, now so much in use, afford perhaps the best means of combining ample warmth with agreeable lightness.

Besides the use of sufficient covering, too much attention cannot be paid to the general temperature of the bedroom; which, for an invalid, should not be suffered to fall below 60 deg. Fahrenheit. Nothing is more injudicious than for a person who has been spending the day in a warm room to retire to rest in one which strikes like an ice-well on entering it; or in which, even if there be a fire, it has not been burning for a sufficiently long time. When the patient is actually in bed, the temperature is of less importance than before he gets there; and hence the advisability of lighting bedroom fires sufficiently early, and of keeping the doors of the rooms closed, so as to retain and economise the heat.

It is often necessary to have a fire burning all night in the bedroom of an invalid or even of a delicate person, and this is a matter which may present some

difficulties. If there be a nurse in attendance, she may wake the sleeper by the noise made in mending the fire; and, if there is no nurse, and the sleeper is alone, the fire is almost certain to go out. The best means of obviating these inconveniences is by the gas fire, the materials for which can be obtained from the Messrs. Verity, of Regent Street. A block of baked clay is connected with a gas pipe, and is put into an ordinary fire grate, being perforated with openings through which the gas ascends to be lighted, and which are, in fact, so many Bunsen burners. Above this, the grate is filled with lumps of a special substance prepared for the purpose, and these lumps soon become red hot and throw out considerable heat without being consumed. The gas tap for regulating the supply is usually in the floor; but a very convenient plan is to have a second tap attached to the wall at the side of the bed, and to have this so arranged that it will cut off the greater part of the gas but not the whole of it. Before going to sleep, the occupant of the bed can turn down the fire so that only a gleam is visible; and, in the morning on awakening, he can turn on the full fire by merely putting out his arm, and can thus have the room thoroughly warmed by the time when he is ready to dress.

Where a gas fire is not procurable, recourse may be had to a variety of coal called "Moirs," which will burn slowly throughout the night, and require no attention when it is once lighted. This kind of coal cannot always be procured; and there is a simple method, less known than it deserves to be, by which an ordinary fire can be kept alight without any interference. For this purpose, the bottom of the grate should be covered with a sheet of iron cut to fit it accurately, (or even with a sheet of thick brown paper), and on this the fire should be laid in the customary manner. Above this first fire, a second should be laid, and the light should be applied to the kindling materials of the second or upper fire, and consequently above the coal of the first fire. The upper fire will burn until it is burnt out; but, before expiring, it will light the one beneath it, and this will always be enough to last until morning.

When all else has been attended to, when the room is quiet and wholesome, when the bed and bedding are appropriate, when food has been taken at suitable times, and when the temperature of the room is satisfactory, something will still depend on the position assumed by the sleeper. On this head, I will quote some sensible observations from Hall's "Journal of Health."

"It is better to go to sleep on the right side, for then the stomach is very much in the position of a bottle turned upside down, and its contents are aided in passing out by gravitation. If one goes to sleep on the left side, the operation of emptying the stomach of its contents is more like drawing water from a well. After going to sleep, let the body take its own position. If you sleep on your back, especially soon after a hearty meal, the weight of the digestive organs and that of the food, resting on the great vein of the body, near the backbone, compresses it, and arrests the flow of the blood more or less. If the arrest is partial, the sleep is disturbed, and there are unpleasant dreams. If the meal has been recent and hearty the arrest is more decided, and the various sensations, such as falling over a precipice, or the pursuit of a wild beast, or other impending dangers, and the desperate effort to get rid of it arouses us, and sends on the stagnating blood; and we wake in a fright or trembling, or in perspiration, or feeling exhaustion, according to the degree of stagnation, and the length and strength of the efforts made to escape the danger."

It may be, in many instances, that sleeplessness is a temporary evil, unconnected with any indiscreet living and due to anxiety of mind concerning some business or other engrossing topic, to which the thoughts return when the recumbent posture is assumed, and through which the brain is prevented from arriving at that comparatively bloodless condition which seems to be essential to sound slumber. When this is so, it is an excellent plan to provide for such relaxation of the surface blood vessels as may serve to divert the circulation from the brain. To pass quickly from a hot bath to a warmed bed, to assume at once a position favour-

able to sleep, and to restrain the thoughts from wandering to the vexatious topic, will generally be found successful.

This question of restraining the thoughts has long held a prominent place among the prescriptions of those who have studied the means of procuring sleep. We cannot actively divert the thoughts from any subject, except by fixing them on something else; and the power of so fixing them, valuable and desirable though it be, is only possessed by persons of considerable and real mental cultivation. Others, although they may in the common sense of the word be "educated," are frequently unable to resist the intrusion of engrossing reflections, which, if admitted, banish sleep. The easiest way of promoting slumber by the negation of thought is to fix the attention upon some monotonous sensory impression, it matters little what. A favourite prescription is the constant *sotto voce* repetition of the words "little pin's head," or of others equally unstimulating to the imagination. To count aloud is another plan of the same description, or to multiply some single figure by itself as long as the memory will permit the continuance of the effort. There are many devices of this kind which do not differ from one another in principle; all of them sometimes useful, all of them often unsuccessful.

A so-called infallible remedy of the same class has been described by a writer on sleep, Dr. Binns, from whose work the following is an extract:

"In the first place we will suppose a person moderately sleepless. He has retired to bed and cannot rest. He tosses and tumbles about, turns first on one side and then on the other, shifts his pillow, pulls the bed-clothes over his shoulders, draws his knees up to his abdomen, places his right hand under his head, in short, exhausts the resources usually put in requisition on these occasions, and yet has failed to procure "tired Nature's sweet restorer, balmy Sleep." What is then to be done? Rabelais tells a story of some monks who, oppressed with wakefulness, resolutely addressed themselves to prayer, and, before they had concluded

half-a-dozen aves, or pater-nosters, we forget which, they all fell asleep. Macnish repeated some lines of poetry.

Sir John Sinclair counted; and Franklin took his "air bath," that is, walked about his chamber "sansculottes." All these resources seem at times to have produced the desired effect, but never to have been always effectual. The following plan has never failed, so far as we are aware, but in two instances, and they are remarkable cases, as the parties move in very different spheres of life; one being an ornament to the House of Lords, the other the talented Editor of a morning Journal."

"We then suppose all these attempts have failed, and the patient, for he is indeed a "sufferer" who cannot sleep, still awake."

"Let him turn on his right side, place his hand comfortably on the pillow, so that it exactly occupies the angle a line drawn from the head to the shoulder would form, and then slightly closing his lips, take rather a full inspiration, breathing as much as he possibly can through the nostrils. This, however, is not absolutely necessary, as some persons breathe always through their mouths during sleep, and rest as soundly as those who do not. Having taken a full inspiration, the lungs are to be left to their own action—that is, the respiration is neither to be accelerated nor retarded. The attention must now be fixed upon the action in which the patient is engaged. He must depict to himself that he sees the breath passing from his nostrils in a continuous stream, and the very instant that he brings his mind to conceive this, apart from all other ideas, consciousness and memory depart; imagination slumbers; fancy becomes dormant; thought subdued; the sentient faculties lose their susceptibility; the vital or ganglionic system assumes the sovereignty; and, as we before remarked, he no longer wakes, but sleeps."

It is very likely that the method advocated by Dr. Binns might sometimes be effectual; but it would be a waste of time to demonstrate its absolute identity, so far as principle is concerned, with many of those for which he proposes it as a substitute.

Among the most melancholy consequences which result from want of sleep are insanity and suicide. Two recent cases of the latter, were belonging to a profession, in which one would least expect it to occur, and were both preceded by almost total absence of sleep, Each of the subjects had exhausted the power of sedatives, and each, when life became no longer bearable to him, died by his own hand. Both were remarkable for pursuing their professional avocations with great energy, fighting as it were against nature, and against the conditions which were gradually undermining their cerebral powers.

Had these two men been in possession of a sufficient amount of medical knowledge, they would not have relied on sedatives alone to procure sleep, and their valuable lives might have been spared to their families and to the community. Unfortunately, they do not furnish solitary instances, for I venture to say that if a searching enquiry was made into the history of other melancholy examples of this nature it would be found that the primary cause had been the loss of natural rest. The cerebral functions, along with all others, become impaired, and the individual is at last reduced to such a state of mental imbecility that he is no longer capable of carrying on the battle of life, and death seems to him to offer the prospect of an elysium, which he hurries to embrace without fear.

Whatever may be the cause that produces deterioration of brain function, whether it be grief, excessive mental exertion, anxiety, or any other, sleeplessness is a common result. Those who suffer from one or more of the above causes, *if* they can *sleep*, may hope that time or other aid will ultimately tide them over their troubles.

Insomnia is one of the most prominent symptoms which first presents itself in those who are predisposed to insanity. This symptom cannot be too seriously regarded, for the ultimate welfare of the patient may depend on its removal. This is not to be accomplished by depending on sedatives alone, for I can assert from long observation that in such cases the practised eye

may always discover derangements in one or more of the vital organs, more especially in the liver, which have been instrumental in producing or in maintaining the malady. Whether such derangements are entirely causes, or partly consequences resulting from impairment of the vital functions by want of sleep, will interfere but little with the nature of the treatment required to restore the health of the patient.

Unfortunately, great ignorance exists amongst the generality of people with regard to the importance of ascribing due weight to the symptoms which are premonitory of impending insanity. Many people will regard the patient as being only "eccentric," and will allow valuable time to elapse before calling in medical aid. In consequence of such delay and neglect, those medical men who are skilled in the treatment of this disease oftentimes find themselves incapable of affording that amount of relief which an earlier attention might have secured. From repeated observations I am able to state that, if proper medical and hygienic treatment is carried out during the first 12 months after the accession of the malady, numerous cases will be cured which otherwise become hopelessly incurable. The hygienic treatment of those from whom sleep has departed must consist in the most complete alteration of the patient's daily habits of life. He should abandon all study and mental exertion, so as to give his brain perfect rest. If it can be obtained, change of air and scene is most influential in diverting the thoughts of the patient from himself; and will be greatly aided by cheerful society, great attention being also paid to regimen and diet.

If the patient can be induced to resume pleasures or pursuits of early life, which have perhaps been abandoned for years, the recurrence to them may often have a most beneficial effect. As an illustration, I will mention a case which came under my observation a few months ago. I was asked to see a gentleman aged 45 who occupied a very high official position, the duties of which were very labourious. When I saw him he had taken six months leave of absence from his employment, and despaired of ever regaining his health. By medical advice

he had been abroad, and had returned to England no better for the change. He was considered to be labouring under softening of the brain. His nights were bad, his memory was defective, and he suffered from severe dyspepsia. His despondency was extreme. I prescribed medicine of a tonic and soothing nature, and asked him to come to me in a week. This he did, and I noticed a slight improvement in his condition. He was living in complete idleness and seemed divested of all energy. I saw how important it would be to him if I could suggest anything which would serve to occupy his mind in some pleasureable pursuit; but he was no sportsman, and did not care for athletic exercises. I asked him if he had never indulged in any country amusements when he was a boy? He replied "I used to be fond of fishing." I strongly recommended him to resume the practice. I told him to go the next day to Yarmouth by steamboat, to sleep there, and on the following morning to go to the Broads, and fish for a week, and then to return to town. On entering my room at the end of this period, I noticed a considerable improvement in his appearance, but what chiefly excited my surprise was that he came in with a smiling face, his former expression having been one of abject despondency. He then told me with some animation that he had taken into the country with him some good champagne, which I advised him to drink, and the bottles had burst in his portmanteau! I was pleased to see the alteration in his manner, and recommended him to continue his visits to Norfolk. He did so for three consecutive times, and at the end of six weeks he felt so much better that he was able to return to his official duties.

One of the chief obstacles that medical men have to encounter in the early treatment of insanity is the patient's own assertion that "there is nothing the matter with him." He will frequently act on this assertion by refusing to carry out those instructions which are necessary for his cure, and will often express his indignation that he should be suspected of being not as other men are.

As regards the medical treatment of cerebral affections attended with loss of sleep, it has already been shown how important it is that we should not depend exclusively on sedatives for the cure of the patient. Sedatives are often most valuable in their effects, but some of the disadvantages of relying on them alone are, that they exert an undue and depressing influence upon the heart, and that they interfere with the integrity of the digestive organs by lowering the appetite, and thus impairing the strength of the body. In these circumstances larger and larger doses are employed, until at last they altogether fail of their intended effects.

The medicines that I have found most serviceable in the treatment of cases of cerebral derangement, complicated with insomnia have been combinations of sedatives and tonics. The most valuable of the former kind is equal parts of the Chloral Hydrate and Bromide of Potassium; of the latter, Iron, in one or other of its various forms, with or without quinine. By adopting this mode of treatment, I have seen many persons saved from becoming insane at times when such a fate was manifestly impending over them.

The various preparations of opium are not the most eligible as sedatives, on account of their tendency to interfere with the due discharge of the hepatic function. The liver, in the majority of cases, more especially in the earlier stages of cerebral derangement, is the organ which of all others is the most conspicuously defective in its action. The same objection does not apply to the Chloral Hydrate or Bromide of Potassium. If there be any disturbance or derangement of the digestive organs, the Bromide of Potassium may be combined with the bi-carbonate of Potash given in a state of effervescence by the addition of citric acid, and the combination forms a very suitable and valuable medicine.

I may fitly close this somewhat discursive chapter on a many-sided subject, by quoting some passages from a letter which I have received from an octogenarian friend a clergyman, and a man of high intelligence, to whom I wrote when I was first meditating upon the subject. I was anxious to obtain the benefit of his varied knowledge, as well as of his personal experience; and he

kindly acceded to my request. He says: "Your letter to me has set me dreaming about sleep, and I have been hunting all I could find about it. My own idea was and is that, a healthy and invigorating sleep is that which follows a day of healthy exercise and wholesome meals. 'Slumber light, by quick digestion bred.' That no rule can possibly be laid down as to the quality and quantity of sleep necessary for individuals, and I believe in the sailor's dictum that 'a sailor can sleep twice as much in an hour as a landsman can.' Jack seems to stick to his work without any sign of weariness till he knocks off, and then can go to sleep at once, as he expresses it, 'without any jaw.' So, too, I've been told that a light infantry man, retiring from a skirmish, will fall asleep under a gun in action, and is not disturbed by the report, but if the bugle is sounded his slumber is disturbed at once. One thing is pretty clear, that the best sleepers have the least to say about it. They go to sleep, and retain no recollection of the circumstance."

"A little girl was asked by her mother, 'Did you sleep last night?' 'No mamma.' This occurred so frequently that medical advice was sought, and various remedies were recommended but all in vain. At last, one doctor had sense enough to ask, 'How do you know that you did not sleep?' the reply was, 'I don't remember anything about it.' She had not understood the meaning of the question; and her answer to the last interrogation showed that she had been sleeping soundly. The difficulty of laying down a rule about refreshing sleep I know from my own experience. I have been tired until I dropped asleep from very exhaustion; and yet an hour's such sleep has restored me fully. This is contrary to the teaching of writers on sleep. They agree as to the time required for restoration, as laid down in the books—here there is no possibility of laying down a rule. This I know from experience, and can take out a restorative quantity of sleep by short naps at intervals, just as the sailor can do, and perhaps sleep more in three hours of sleep, thus taken out, than the regular sleeper can do in six hours at a stretch. And possibly for this

reason : I go to sleep when I feel that Nature requires it; whilst the regular sleeper of six hours puts off going to sleep, however much he may need it, till 'bedtime,' and so, like a person who does not eat, although hungry, till dinner time, does not sleep 'with a will.' When he does get into bed, he is too tired to go to sleep, and lies 'noodling' half the night, neither asleep nor awake, nor even dreaming decently."

"Coming into a warm room, or near a fire, after walking through a cold atmosphere, commonly produces drowsiness; although a degree of heat which is no greater, or even not so great, on a sultry summer night, will prevent sleep. Again, a moderate degree of cold, enough to make one shiver, and the teeth to chatter, will prevent sleep; while intense cold causes not only sleep, but the 'sleep that knows no waking.'"

Many years ago a friend of mine, during a winter of extreme severity, had occasion to go to Norwich. It was long before railways were constructed, and he travelled by the mail. He was obliged to go outside, all the inside places having been taken. There were two other outside passengers, who sat behind the coachman. When my friend reached Barnet, he had suffered intensely, and had difficulty in getting down from his seat. He asked for the ostler, and bade him bring a truss of straw. He then had this placed on the roof of the coach, and made the ostler open the truss, and pack him up in it completely. This was soon done. He was enveloped in the straw from head to foot, and it was well secured around him. He slept through the whole journey without feeling the cold; but his fellow-passengers, on arriving at Norwich, were both found to be frozen to death, still sitting bolt upright. Straw is well known to be an excellent non-conductor, on account of the large quantity of silica which it contains.

In Stoepler's "Anecdotes of Peter the Great" we may read that this eccentric potentate lay only on straw during his rapid journeys; and, being accustomed to sleep for an hour after his dinner, he was accustomed to rest his head on one of his attendants, who had to serve for a pillow. The poor fellow selected for this

service was compelled to remain absolutely motionless, for fear of awaking his master, who was as good humoured when he had slept soundly, as he was gloomy and dangerous when his slumbers had been disturbed, or when he had been awakened unnecessarily before the appointed time.

Much more might be written on this all-interesting subject; if, however, I have succeeded by my contribution, in calling attention to its vital importance, I am content to rest.

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